UNIVERSITY OF GEORGIA
FEB 24 1955
LIBRARIES

Drug and Cosmetic Industry

FEBRUARY 1955

A Chamois, quite remote, might quote "NORDA makes good scents"

It's pretty well known everywhere that Norda makes scents that make money.

You can easily tell by the smell. A Norda scent has a fine, true odor. There's character to it. It's honest. It's been made with integrity.

When Norda duplicates Nature, the fragrance is wonderfully natural. Maybe it's artfully subtle. Or it may be robust and simple. It always is *right* for its purpose.

For *free samples* of the smell that will sell, send your letterhead today to Norda.

Norda **Essential Oil and Chemical Company, Inc.**
601 West 26th Street, New York 1, N. Y.

Always remember—never forget
Norda Makes Good Scents

CHICAGO • LOS ANGELES • SAN FRANCISCO • MONTREAL • TORONTO • HAVANA • LONDON • PARIS • GRASSE • MEXICO CITY

PRODUCED FOR THE PROUD

BY

Duveen

PRIVATE LABEL SOAPS

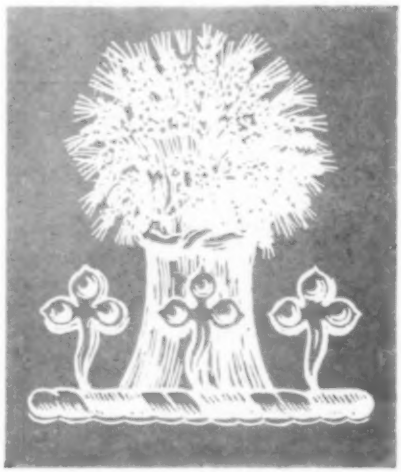
Toilet

Deodorant

Shaving

Medicated

Aerosol



DUVEEN SOAP CORPORATION

36-14 35th Street

Long Island City 6, New York

Drug and Cosmetic Industry

February 1955 Vol 76 No. 2

feature articles

165 **Food and Drug Enforcement**

168 **Monohydric Alcohol Esters in Cosmetics**
by Harry Hilfer

169 **Wider Drug Distribution**

170 **Acetylated Monoglycerides in Cosmetics**
by Everett G. McDonough and Walter W. Edman

172 **Lather Shaving Creams**
by Wm. R. Keithler

174 **A New Mercaptan-Disulfide Mechanism**
by Ross Whitman and Milton G. Eckstrom

176 **Evaluation of Dermal Phenomena**
by Thomas W. Tusing, M.D.

178 **Aspects of Several Antibiotics—Conclusion**
by Wm. Burdell Baker

185 **Changing Distribution Patterns in Cosmetics**
by Richard Salomon

189 **Abrupt Package Modernization**

193 **Metered Aerosol Dispensing**
by H. R. Shepherd

departments

157 **Keeping Posted**
by Thomas R. Farrell

196 **Packaging and Selling**
by Frazer V. Sinclair

203 **Doin's**

204 **Patent Thoughts and Trends**
by Thomas Cifelli, Jr.

207 **News**
by Frank S. Child

219 **Trade Literature**

221 **Management Forum**
by Francis Chilson

234 **Animal Health**
by Milton A. Lesser

236 **Compounder's Corner**
by Milton A. Lesser

241 **Advancing Therapy**
by Milton A. Lesser

244 **Perfumer's Shelf**
by Milton A. Lesser

247 **Abreast of the Markets**
by Frank S. Child

258 **Industry's Books**
by Harry G. Kelbly

260 **Readers' Questions**
by Milton A. Lesser

THOMAS R. FARRELL, *Editor*
FRANK S. CHILD, *Managing Editor*
MILTON A. LESSER, *Technical Editor*
HARRY G. KELBLY, *Raw Material Editor*
FRANCIS CHILSON, *Production Consultant*
MAX FRANKEL, *Art Director*

Drug & Cosmetic Industry is published monthly by Drug Markets, Inc., Frazer V. Sinclair, President and Treasurer; Thomas R. Farrell, Vice-president and Secretary. Editorial and General Office: 101 West 31st St., New York 1, N. Y., U. S. A. Publication Address: Sun Printing Corp., 28 Renne Ave., Pittsfield, Mass., U. S. A.

Reprints of cover illustrations are available on request.

Business Manager, Frazer V. Sinclair; Advertising Manager, P. W. Alexander; Advertising Representatives, Walter M. Brauneiss, C. R. Keeley; Production Manager, Katherine Hyde; Circulation Manager, Harry G. Kelbly.

Midwestern Advertising Representative: Dwight Early and Sons, 100 No. LaSalle St., Chicago 2, Telephone, CEntral 6-2184.

Subscription price $3.00 a year, in advance. Foreign Countries, $5.00. Single copies, 35c; Back issues 50c. Entered as Second Class Matter, January 1, 1928 at the Post Office at Pittsfield, Mass., under the Act of March 3, 1879. Member of Audit Bureau of Circulations.

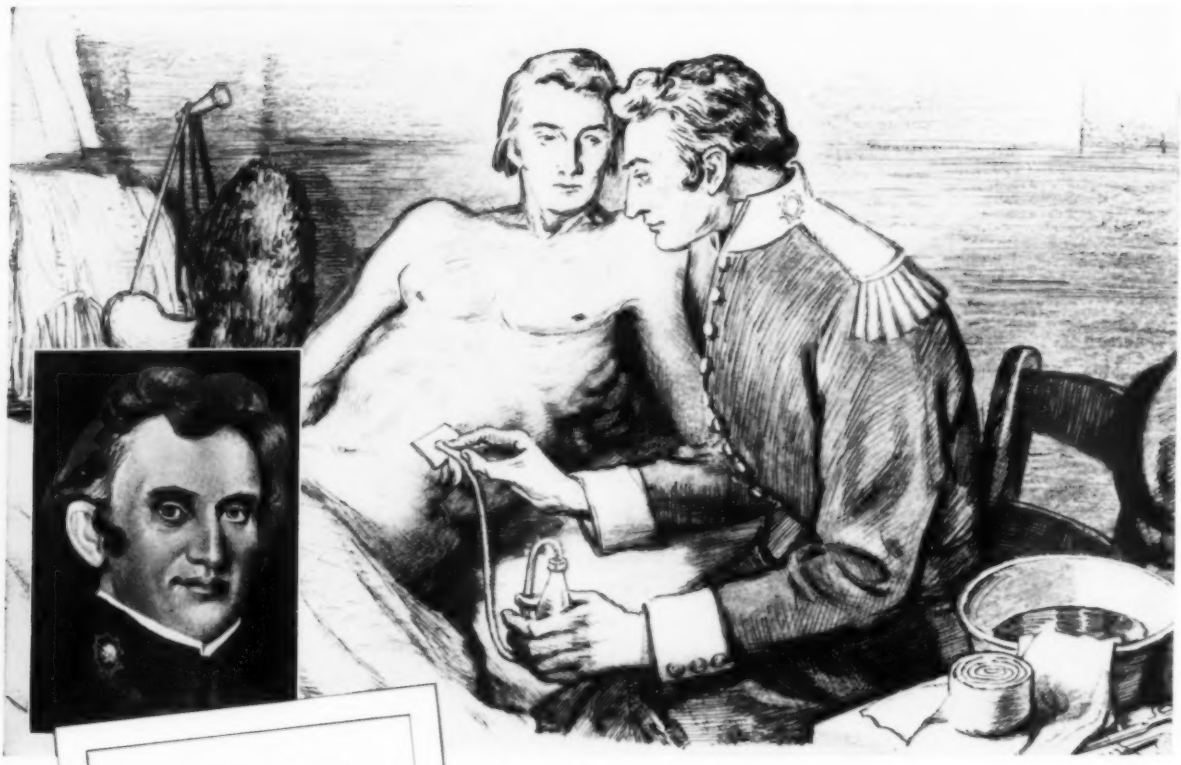
Contents Copyrighted 1955
by Drug Markets Inc.

for Folic Acid

You can actually *see* the superiority of Cyanamid Folic Acid! Its color is a lighter, paler yellow—visual proof of its purity. And *all* Cyanamid Folic Acid is of this same lighter yellow, parenteral grade.

Cyanamid was first to synthesize Folic Acid, first to achieve commercial production. Cyanamid has promoted it continually to the medical profession, and is currently reminding physicians that Folic Acid has been established as essential to human nutrition.

Contact your nearest Cyanamid representative today! Offices in Chicago, Detroit, Philadelphia, Los Angeles, St. Louis, Montreal, Toronto. Or write for Cyanamid's *new* Technical Bulletin on Folic Acid. Address: Fine Chemicals Division, American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N. Y.



KNOWN BY
REPUTATION

Bettman Archive

WILLIAM BEAUMONT (1785–1853). American surgeon in the United States Army, he became noted for his studies on digestion, the significance of gastric juice, and the causes of interruptions in its secretion. Illustration shows him conducting an experiment on human digestion.

COLUMBIA-SOUTHERN

SODIUM BICARBONATE

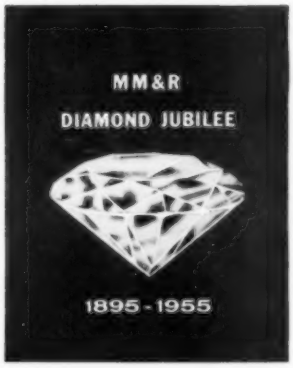
U. S. P.

Made to highest standards, Columbia-Southern Sodium Bicarbonate meets your most precise needs for compounding or repackaging. It is noted for its purity, whiteness and uniform screen size. Produced in powdered or granular form. Specify Columbia-Southern Bicarbonate U.S.P. . . . known by reputation.

COLUMBIA-SOUTHERN
CHEMICAL CORPORATION
SUBSIDIARY OF PITTSBURGH PLATE GLASS COMPANY

EXECUTIVE OFFICES: • ONE GATEWAY CENTER, PITTSBURGH 22, PENNSYLVANIA

DISTRICT OFFICES: BOSTON • CHARLOTTE • CHICAGO • CINCINNATI • CLEVELAND • DALLAS • HOUSTON • MINNEAPOLIS • NEW ORLEANS
NEW YORK • PHILADELPHIA • PITTSBURGH • ST. LOUIS • SAN FRANCISCO



Partners in Progress

The growth and development of *MM&R* span the six most momentous decades in the business and industrial life of America. During this period, the swift pace of discovery and invention remade the American way of life. Successfully meeting the challenging problems of expanding industries, *MM&R* advanced to a position of leadership in the world's essential oil markets.

Today, equipped with the most modern facilities for research and production, splendidly staffed, and sustained by long experience and vast international resources, *MM&R* is preeminently qualified to serve its customers in all parts of the world.

Customers made our business — customers will keep us in business. Their reliance on the resourcefulness and ingenuity of *MM&R* has been an important factor in the development and manufacture of many new fragrances and flavors to give greater sales appeal to their products. Such confidence and support, for which we are most grateful, made possible our Diamond Jubilee.

Magnus, Mabee & Reynard, Inc. and its *customers* are, indeed — *partners in progress.*

MAGNUS, MABEE & REYNARD, INC.
One of the World's Greatest Suppliers of Essential Oils, Flavors and Basic Perfume Materials.
16 DESBROSSES STREET, NEW YORK 13, NEW YORK
221 NORTH LASALLE STREET, CHICAGO 1, ILLINOIS

RHODIA offers an extensive line of highest-quality PERFUME OILS for AEROSOL PROPELLANTS

Consult this chart to learn which tested-and-proved RHODIA fragrance is best suited for your aerosol product.

	CODE	ODOR	PRICE PER LB.	SPACE DEODORANTS	COLOGNES T W	SHAVE CREAMS	SHAMPOOS	CREAMS LOTIONS	INSECTICIDES MOTHICIDES	HOUSEHOLD CLEANERS	LETHANE THANATE
MODERN 65	2-376	C5	$2.10	✓✓✓	✓✓✓				✓✓	✓✓✓	
ALAMASK® CA	2-193	CEDAR	2.20						✓✓		
BOUQUET LM	7331	LAV-MINT	2.50								
MINT	7351	MINT	2.75								
ALAMASK ND	1-773	SPICE	2.75								
BOUQUET PI	7321	PINE	3.15	✓			✓✓				
BOUQUET	7340	FLORAL	3.50							✓	
LEMON	7212	LEMON	3.60	✓					✓		
PINE	7338	PINE	3.75								
MINT	7313	MINT	4.00								
BOUQUET OZ	7327	OZONE	4.25	✓✓	✓✓		✓	✓✓	✓		✓
COLOGNE	7329	COLOGNE	4.50	✓✓	✓✓						
BOUQUET BG	7200	COLOGNE	4.75		✓						
ORANGE BLOSSOM	7344	ORANGE BLOS.	5.00								
SWEET PEA	7201	SWEET PEA	5.00								
COLOGNE	7337	COLOGNE	5.00			✓	✓✓		✓		
PINE NEEDLE	7342	PINE	5.15								
MODERN 32	2-243	MODERN	5.25			✓✓	✓		✓		✓
FOUGERE	7281	FOUGERE	5.15	✓							
LAVENDER H	7333	LAVENDER	5.25								
BOUQUET SP	2-500	SPICE	5.25	✓✓	✓✓	✓✓					
BOUQUET C	7290	CHYPRE	5.25								
BOUQUET	7282	LAV. FOUGERE	5.50	✓		✓	✓				
FLORAL	7330	FLORAL	5.75								
BOUQUET ST 65	2-477	FLORAL	5.75								
ROSE	7346	ROSE	5.85			✓		✓			
FOUGERE	7320	FOUGERE	5.85				✓✓				
LOCUST BLOSSOM	7339	LOCUST BLOS.	6.85								
GARDENIA	7306	GARDENIA	6.85								
BOUVARDIA	7341	BOUVARDIA	7.60								
COLOGNE	7348	COLOGNE	7.85			✓	✓	✓	✓		
LILAC	7240	LILAC	8.35								
LAVENDER	7283	LAVENDER	9.00			✓					
COLONIAL	7347	SPICE	9.90								
SCOTCH KILT	7349	HEATHER	12.50								
LILY-VALLEY	7350	LILY-VALLEY	13.75			✓			✓		
LILY-VALLEY	R-133	LILY-VALLEY	18.90			✓					
SHARL	6279	ORIENTAL	20.00								

For expert advice on your formulations, or methods of improving the odor of your product, contact us. Write today for a catalog listing RHODIA's aromatic materials.

Write for your copy of this chart

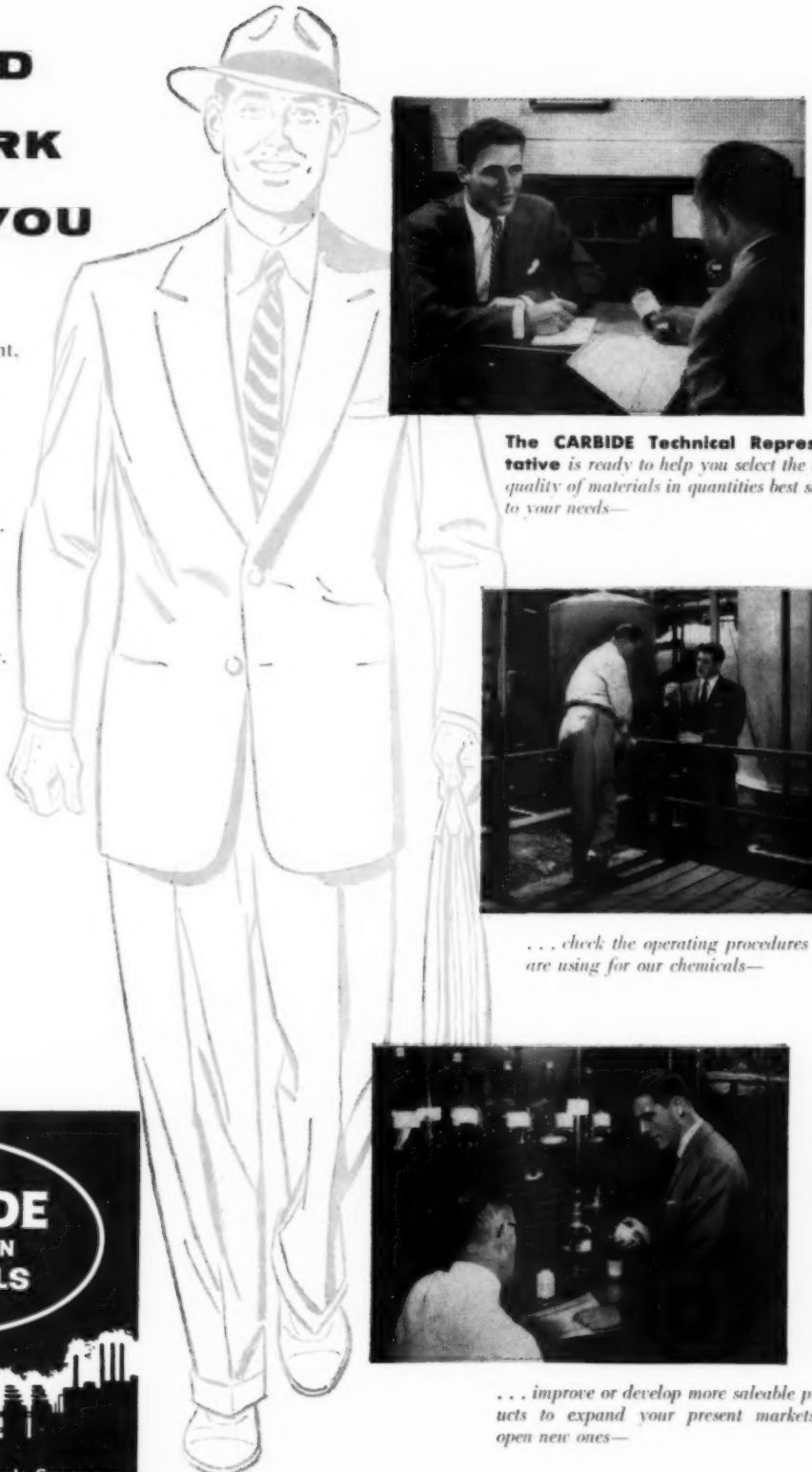
Rhodia INC.

230 Park Avenue, New York 17, N. Y.

Plant: Paterson, N. J.

HE'S PAID TO WORK FOR YOU

If you are a Purchasing Agent, Plant Engineer, or Research Chemist, you can rely upon your CARBIDE Technical Representative for assistance. Every CARBIDE Representative is a graduate chemist or chemical engineer. In addition, he has been carefully trained in the application of our products to help you solve research and production problems.



The CARBIDE Technical Representative *is ready to help you select the right quality of materials in quantities best suited to your needs—*

. . . check the operating procedures you are using for our chemicals—

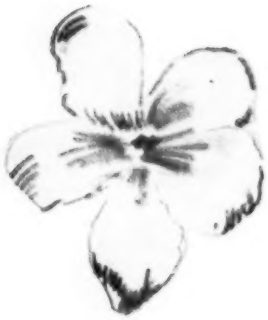
. . . improve or develop more saleable products to expand your present markets or open new ones—

CARBIDE AND CARBON CHEMICALS

Carbide and Carbon Chemicals Company
A Division of
Union Carbide and Carbon Corporation
30 East 42nd Street UCC New York 17, N. Y.

A 'phone call to the nearest CARBIDE office will bring a Technical Representative—he'll help to save your time.

In Canada: Carbide Chemicals Sales Company, Division of Union Carbide Canada Limited, Toronto.

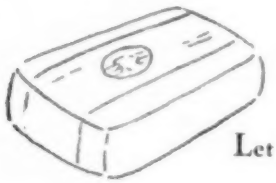


New Enchantment

for your

Perfumes

Cosmetics



Soaps . . .

Let us help you with the
UNUSUAL
in **NATURAL** and **AROMATIC MATERIALS**

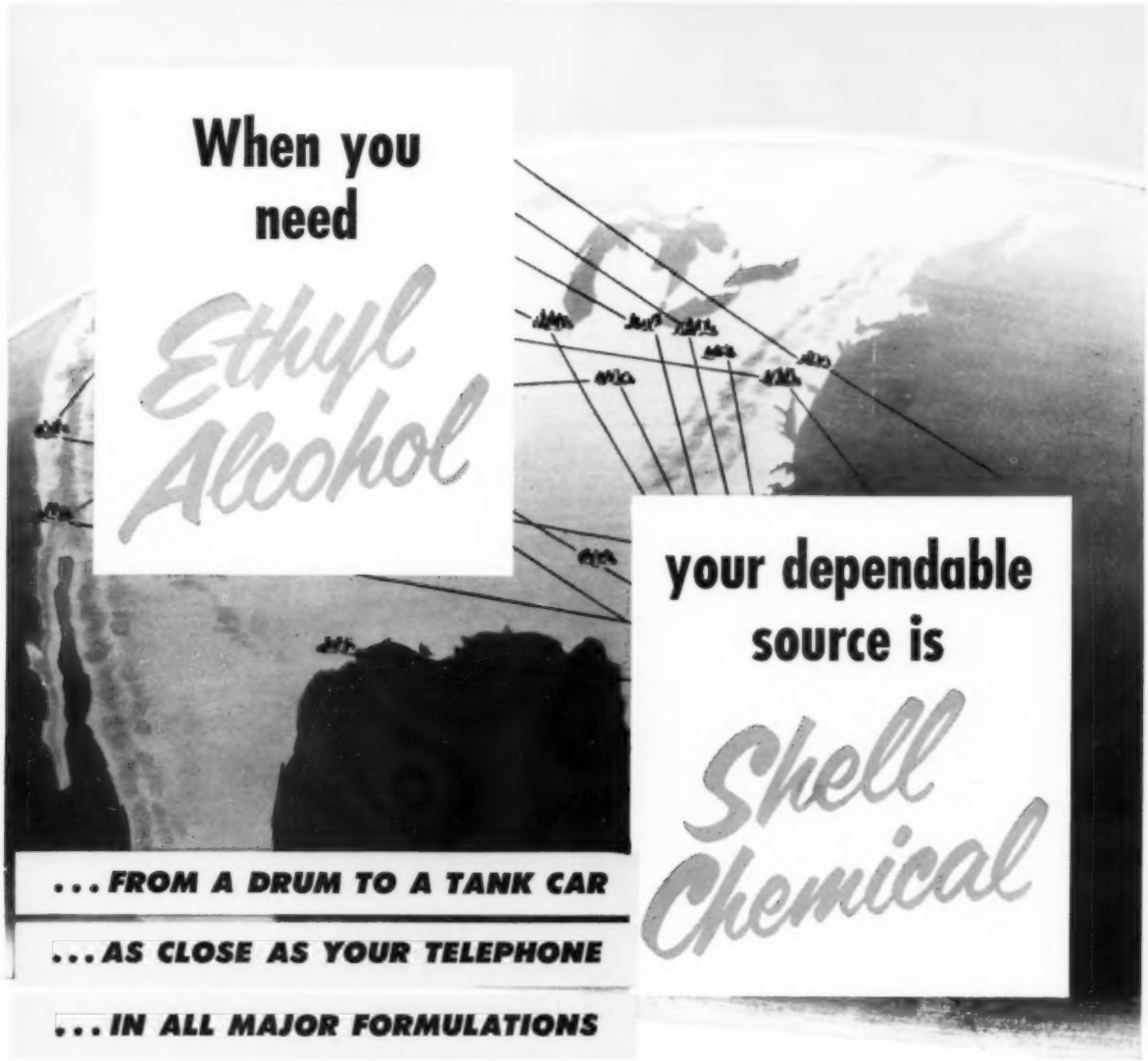
We are exclusive representatives for TOMBAREL FRERES, Grasse
Established 1857

• Absolute Supreme Flower Essences • Surfine Essential Oils • Resinoids

Tombarel Research and Tombarel's modern facilities can help give your product that new note that stimulates new business

Tombarel
PRODUCTS CORPORATION
725 BROADWAY • NEW YORK 3

IN CHICAGO: A. C. DRURY & CO. INC. • 219 EAST NORTH WATER STREET



To SERVE YOU PROMPTLY, Shell Chemical has established complete denaturing plants in key industrial centers.

Shell Chemical's ethyl alcohol is of the highest quality, meeting or surpassing all Federal and commercial specifications for purity. It is available as pure alcohol (190 proof), in specially and completely denatured grades, as well as in two proprietary solvents—Neosol® and Neosol A.

Next time you need ethyl alcohol, remember that Shell Chemical bulk distribution facilities are as close as your telephone . . . ready to make the fastest possible delivery . . . in drums, tank trucks, compartment trucks, tank cars or compartment tank cars.

• • •

Your Shell Chemical representative will be glad to discuss your alcohol supply problem with you. Write or phone your nearest Shell Chemical office. Send for "Organic Chemicals," SC:53-18, a catalog of our complete line of other solvents, intermediates and resins.

SHELL CHEMICAL CORPORATION

CHEMICAL PARTNER OF INDUSTRY AND AGRICULTURE

380 Madison Avenue, New York 17, New York

Atlanta • Boston • Chicago • Cleveland • Detroit • Houston • Los Angeles • Newark • New York • San Francisco • St. Louis

IN CANADA: Chemical Division, Shell Oil Company of Canada, Limited • Montreal • Toronto • Vancouver

introducing Mallinckrodt®

Mallinckrodt again provides a new service for pharmaceutical manufacturers

Serving the pharmaceutical manufacturer, knowing and anticipating his chemical requirements, is paramount with all Mallinckrodt research, development and sales people . . . and is reflected in the quality and design of the chemicals Mallinckrodt makes for pharmaceutical manufacturers. Mallinckrodt's new line of ***low sodium chemicals*** is another example of their accomplishments. Here is a refinement which opens the door to new pharmaceutical products for several important medical purposes.

Sodium in these compounds is controlled to less than 0.01%

Carefully controlled sodium intake is an increasingly important factor in the control of many diseases and conditions which are complicated by fluid retention. Reduction in sodium intake decreases the burden on kidneys and heart and tends to increase the elimination of fluid. This makes control of the disease or condition easier.

Na < 0.01

low sodium chemicals

for use in preparations for the treatment of

HEART CONDITIONS

LIVER CONDITIONS

KIDNEY CONDITIONS

HYPERTENSION

PROLONGED HORMONE THERAPY

TOXEMIAS OF PREGNANCY

The chemicals now available, controlled to a maximum of 0.01%, include...

Ammonium Chloride USP Granular Low Sodium
Calcium Carbonate Precipitated USP Light Low Sodium
Calcium Gluconate USP Powder Low Sodium
Potassium Chloride USP Granular Low Sodium
Potassium Chloride USP Powder Low Sodium
Potassium Carbonate Anhydrous Low Sodium
Ammonium Salicylate NF Low Sodium
Calcium Chloride USP Granular Low Sodium
Calcium Chloride Anhydrous Low Sodium

Other low sodium chemicals are being investigated

In recognition of the rapidly growing importance of low sodium therapeutic agents and procedures in pharmaceutical as well as food preparations, Mallinckrodt is prepared to supply many chemicals to close sodium limits. You are invited to contact us for any low sodium chemicals in which you are interested.

Mallinckrodt® Since 1867

PRIME PRODUCER OF CHEMICALS FOR THE PHARMACEUTICAL INDUSTRY

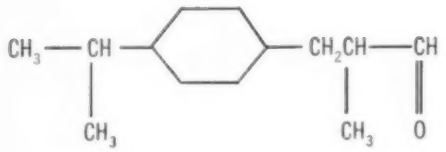
Mallinckrodt Chemical Works

MALLINCKRODT STREET, ST. LOUIS 7, MO.
72 GOLD STREET, NEW YORK 8, N. Y.
CHICAGO • CINCINNATI • CLEVELAND • LOS ANGELES
PHILADELPHIA • SAN FRANCISCO • MONTREAL • TORONTO

CYCLAMAL®

(CYCLAMEN ALDEHYDE)

$C_{13}H_{18}O$



Molecular Weight: 190.27

Typical Specifications:

PHYSICAL APPEARANCE:	Nearly colorless liquid.
ASSAY:	93% minimum Aldehyde content.
ODOR TYPE:	Floral; Lily-of-the-Valley or Muguet.
SOLUBILITY (@ 20° C):	10 parts soluble in 15 parts 80% Ethyl Alcohol.
STABILITY:	Lasting in soaps, cosmetics and of a high quality which permits its use in the most expensive perfumes.
REFRACTIVE INDEX $(n\frac{20}{D})$**:**	1.5055
SPECIFIC GRAVITY $(\frac{25}{25})$**:**	0.950
SUGGESTED USES:	As a base for Lily-of-the-Valley and Muguet perfumes to 5%; as a floral modifier from ¼% to 5%.

Note these additional VERONA specialties:

AMBRE SUPERESSENCE E-1273 • RESEDALIA

VERONOL • FLOWER OIL WHITE LILAC

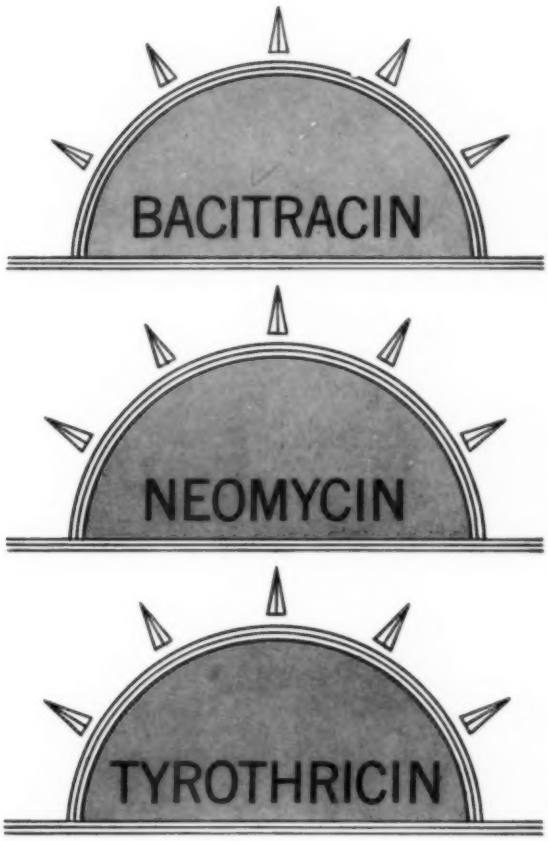
Sole representatives in the United States for: J. & E. SOZIO, GRASSE, FRANCE

RESINOIDES • NATURAL ABSOLUTES • ESSENTIAL OILS

Write for our complete catalogue.

PRODUCTS BUILD SALES FOR *Your* PRODUCTS

Aromatics Division
VERONA CHEMICAL COMPANY
Plant and Main Office: 26 Verona Avenue, Newark, N. J.
1210 Rosedale Avenue, Chicago, Ill.



New Uses Every New Day

The *specialty antibiotics*, bacitracin, neomycin, tyrothricin, are gaining further well deserved acceptability in external preparations for skin conditions.

In a recent report on pyogenic skin infections, Pillsbury and Kligman mention the avoidance of topical application of compounds which might be required later for the treatment of certain systemic infections, and state they find bacitracin and neomycin reasonably safe, with a wide spectrum of antibacterial effect.[1] Since bacitracin and neomycin singly and in combination are effective against gram-negative and gram-positive organisms, the results compare favorably with other antibiotics used locally. No sensitization or primary irritation has occurred from their usage.[2]

1. Pillsbury and Kligman, Correspondence, British Medical Journal, March 20, 1954. Page 706.
2. J. M. Greenhouse and W. C. Ryle, A.M.A. Archives of Dermatology and Syphilology. 69:366-67, March, 1954.

BACITRACIN

PENITRACIN (PENICK BRAND BACITRACIN) for topical use — also of particular value in the treatment of intestinal infections.

NEOMYCIN

NEOMYCIN SULFATE PENICK — for ointment manufacture. Tableted, for pre-and-post-operative intestinal surgery.

TYROTHRICIN

TYROTHRICIN PENICK — alone or in combination with other antibiotics in oral hygiene, throat lozenges and deodorants.

The positive, individual antibacterial effects of these three antibiotics are further magnified by combination with each other. Whether alone or combined, Bacitracin, Neomycin and Tyrothricin present versatile weapons against susceptible bacteria over a wide range.

Basic Products for the Pharmaceutical Industry

S. B. PENICK & COMPANY

50 Church Street, New York 8, N.Y. Telephone COrtlandt 7-1970

735 West Division Street, Chicago 10, Ill. Telephone MOhawk 4-5651

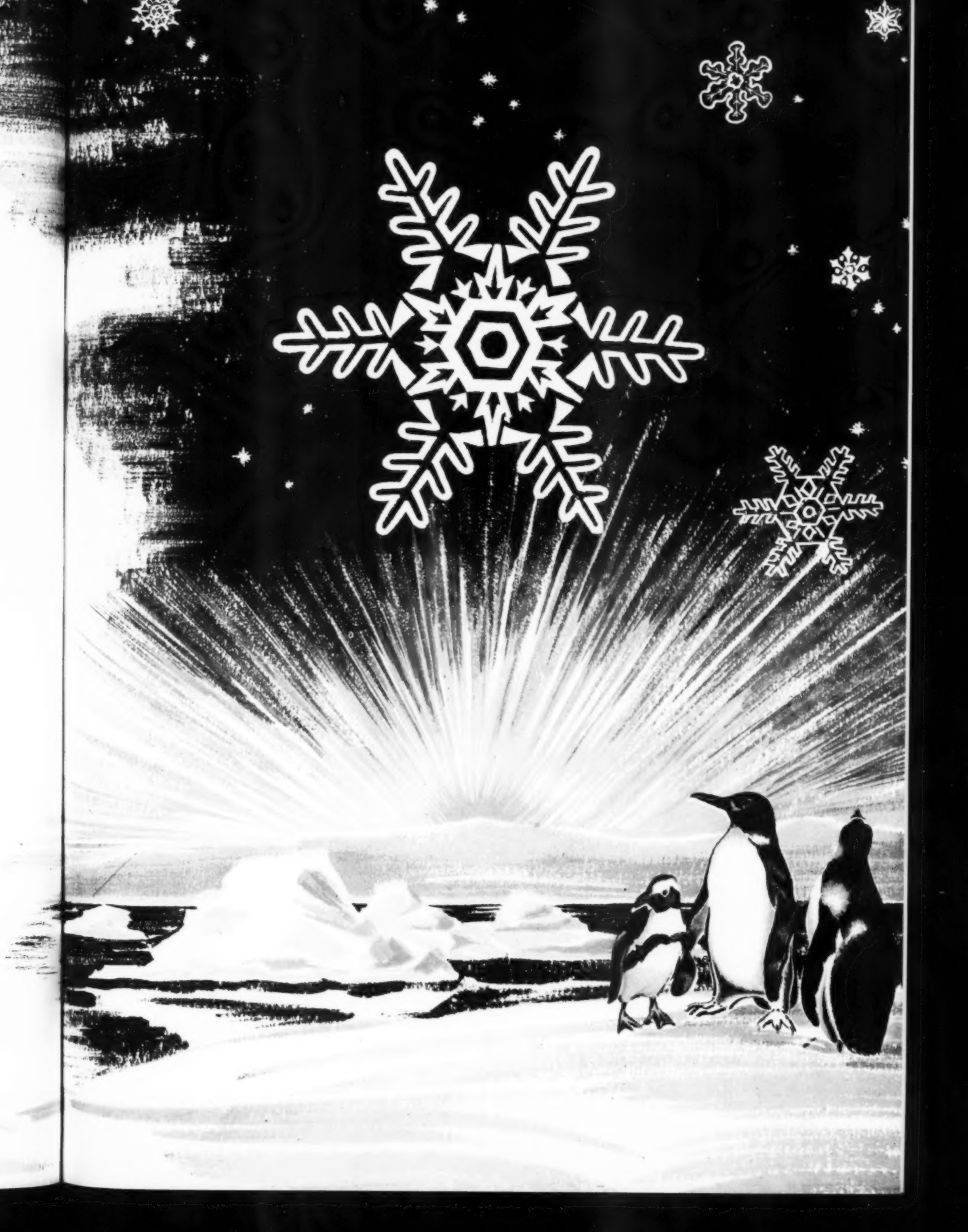
THERE'S *Design* IN FRAGRANCE TOO!

The perfumer of yesteryear depended for his success solely upon striking a happily different combination of the age-old aromatic materials. Today many fragrance successes are designed and based on the unusual note of a newly discovered aromatic from the laboratory of the research chemist. Upon this start the perfumer, with his artistry and technical skill, will design a fragrance truly original in its beauty. For expert help in any perfuming problem, seek the advice of van Ameringen-Haebler, Inc.

MANUFACTURERS AND CREATORS OF THE FINEST PERFUME MATERIALS

van Ameringen · Haebler, Inc.

521 WEST 57th STREET NEW YORK 19, N. Y.



Bouquets to You
With
Florasynth's
BOUQUET 1950
Bouquet 1950 is the modern interpretation to a fresh, modern scent . . . the search for the new and intriguing . . . distinctly different . . . timed for successful products . . . all-ways . . .

Florasynth LABORATORIES, INC.
CHICAGO 6 · NEW YORK 61 · LOS ANGELES

DALLAS 1 · DETROIT 2 · MEMPHIS 1 · NEW ORLEANS
ST. LOUIS 2 · SAN BERNARDINO · SAN FRANCISCO
Florasynth Labs. (Canada Ltd.)
Montreal · Toronto · Vancouver · Winnipeg
Florasynth Laboratories de Mexico S. A. — Mexico City

The biological effectiveness of *d*-α-Tocopheryl Acetate is known to exceed that of the material used in the International Standard of Vitamin E by the factor 1.36. It is what DPi supplies for manufacture into vitamin E pharmaceutical products.

In addition to Distilled Concentrate of *d*-α-Tocopheryl Acetate and the pure material, Crystallized *d*-α-Tocopheryl Acetate, we also make Distilled Concentrate of Mixed Tocopherols and Crystalline *d*-α-Tocopheryl Acid Succinate. We do not manufacture pharmaceuticals in dosage form. ***Distillation Products Industries***, Rochester 3, N. Y. Sales offices: New York, Chicago, and Memphis • W. M. Gillies and Company, Los Angeles, Portland, and San Francisco • Charles Albert Smith Limited, Montreal and Toronto.

leaders in research and production of vitamin E

DPi

Also... vitamin A... distilled monoglycerides ...some 3500 Eastman Organic Chemicals for science and industry

Distillation Products Industries *is a division of* **Eastman Kodak Company**

DOW PROPYLENE GLYCOL, U. S. P.

ONE SOLVENT SERVING MANY PHARMACEUTICALS

. . . improving preparations for internal consumption, topical application or injection

The formulation of pharmaceuticals demands a dependable solvent. It must be safe, medically acceptable and a good carrier. Propylene glycol, U. S. P., fills these exacting specifications for many approved pharmaceuticals today—may easily do the same for your products.

In some formulations propylene glycol, U. S. P., also provides important preservative action—others benefit from its emollient, humectant or lubricant properties. Truly versatile in its solvent properties, propylene glycol is effective with many organic chemicals used in the field of chemotherapy—indicating its value in injectables, antiseptics, salves, elixirs and ointments.

Standard of dependability in both quality and supply is Dow propylene glycol, U. S. P. Aiding in product improvement for cosmetics as well as pharmaceuticals, its use has brought economy in many cases. For your sample and information on properties, write to THE DOW CHEMICAL COMPANY, Midland, Michigan, Dept. OC 811G.

you can depend on DOW CHEMICALS DOW

The Height of Appeal

The essence of appeal in your cosmetics, soaps, creams and toilet preparations is the fragrance you instill in it.

Here at *Synfleur*, the problem of reproducing and improving upon nature has been met successfully in an almost limitless array of products for 65 years.

This long experience in efficiently and economically enhancing commercial appeal with original compositions, aromatic bases and other perfume materials has fostered an enviable creative skill and tradition at *Synfleur*.

Turn this skill to your advantage when introducing new products or modernizing old ones. The facilities of our exceptionally competent laboratories are at your disposal.

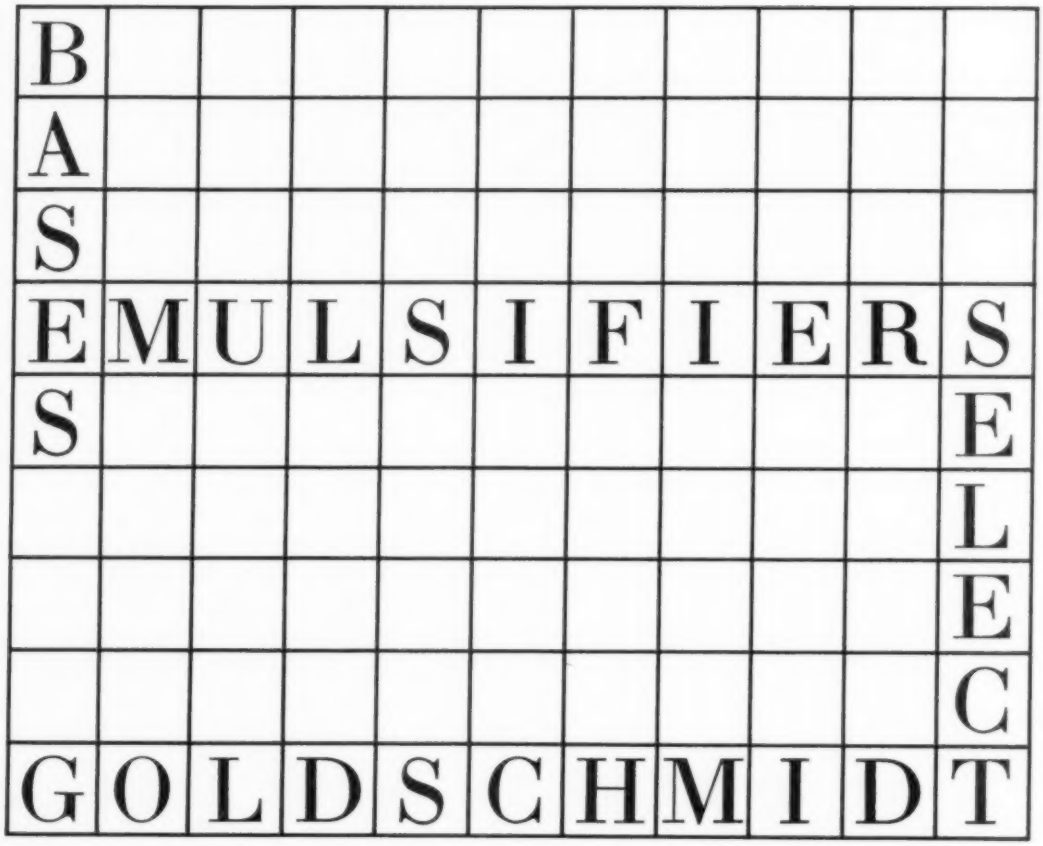
Founded 1889 by Alois Von Isakovics

Synfleur SCIENTIFIC LABORATORIES, INC.

MONTICELLO, N. Y.

ATLANTA • DETROIT • NEW YORK • HAVANA • RIO DE JANEIRO • MEXICO, D. F.
Chicago • Melbourne • Burma • Hong Kong • Bogota • San Jose
Ciudad Trujillo • Guayaquil • Guatemala City • Calcutta • Wellington
Managua • Panama • Asuncion • Manila • San Salvador • Montevideo
CANADA: Herman & Leal • 637 Craig Street West • Montreal, Quebec

A Winning Combination



For ease of use, dependable results and the solution to difficult problems, we recommend our TEGINS or TEGACIDS, determined by the characteristics desired in the finished product.

In specific applications, our lanolin absorption bases, PROTEGIN X or ISO-LAN are suggested to impart the required qualities.

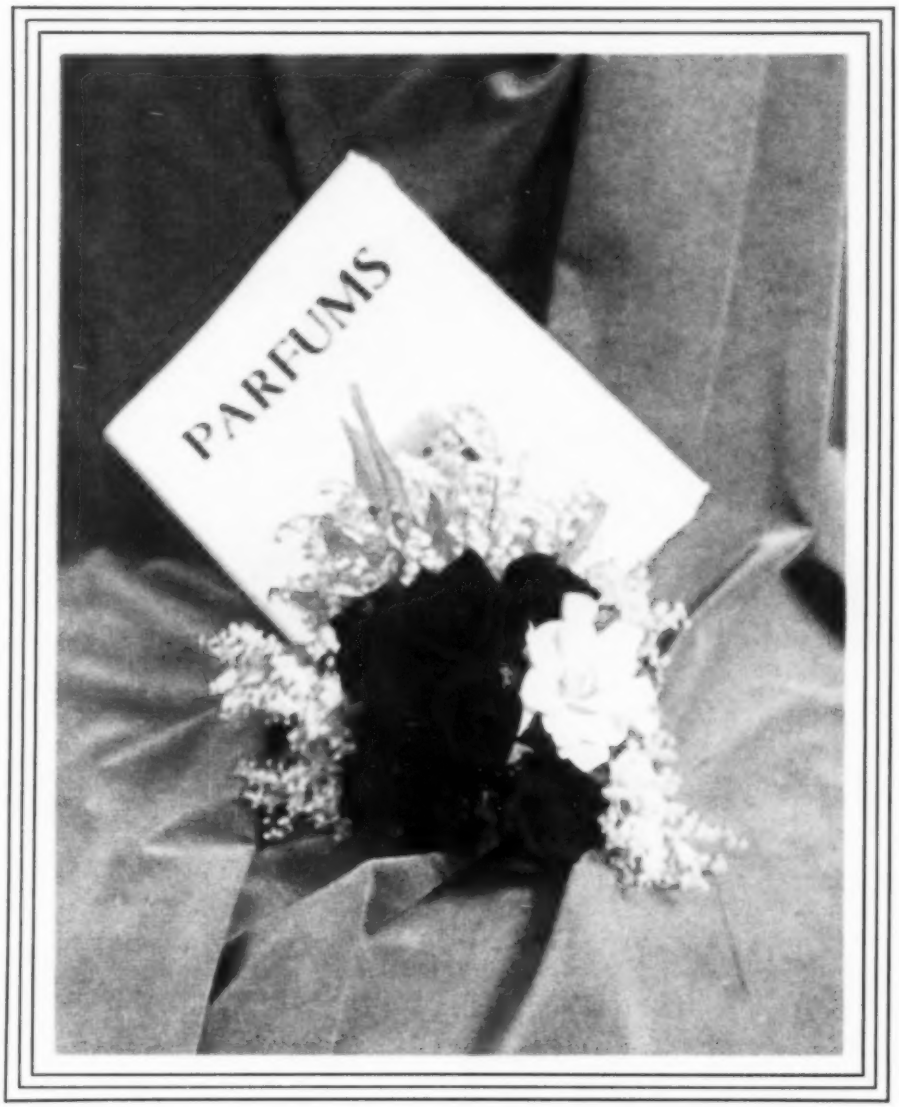
No matter which base or emulsifier is used further insure the quality of your product with our TEGOSEPT PRESERVATIVES.

GOLDSCHMIDT

CHEMICAL CORPORATION
153 Waverly Place, New York 14, N. Y.

SALES REPRESENTATIVES

CHICAGO • ST. LOUIS • LOS ANGELES • TORONTO • MONTREAL



Roure-Dupont, Inc.

PLEASE ☞
TURN THE PAGE

MASTERPIECES *Roure-Dupont, Inc.* IN PERFUMERY

FOR THE PERFECT FRAGRANCE CUSTOM-MADE FOR YOU, CONSULT

Roure-Dupont, Inc.

SINCE 1820 MAKERS OF THE FINEST PERFUMES

Sole Agents in the United States and Canada

FOR

SOCIÉTÉ ANONYME DES ÉTABLISSEMENTS

ROURE-BERTRAND FILS et JUSTIN DUPONT

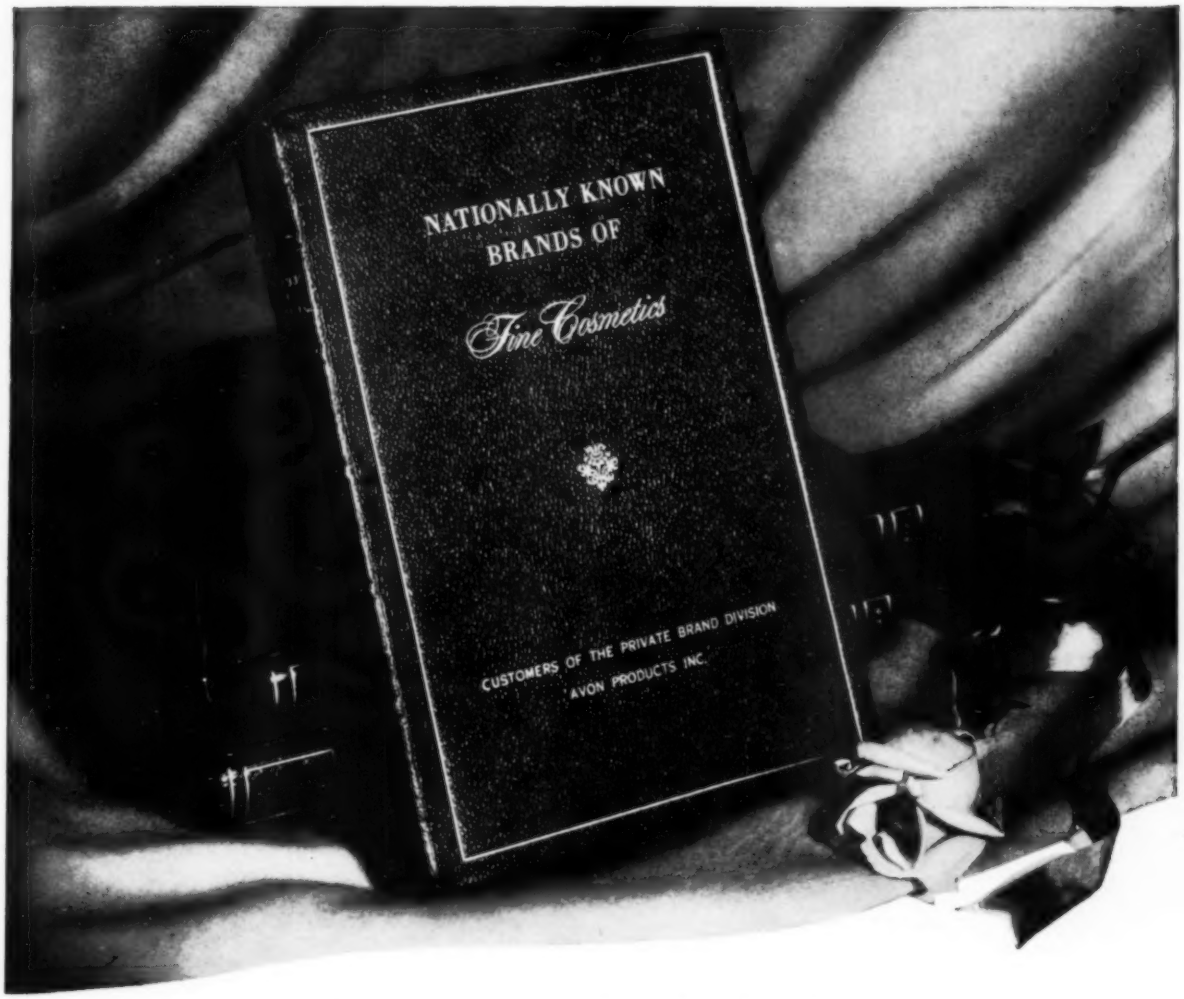
GRASSE, FRANCE

Essential Oils · Aromatic Products · Perfume Bases

ROURE-DUPONT, INC.
366 Madison Avenue
New York, N. Y.
VANDERBILT 6-5830

ROURE-DUPONT, INC.
510 North Dearborn
Chicago, Illinois
SUPERIOR 3881

ROURE-DUPONT, INC.
5517 Sunset Boulevard
Hollywood, Calif.
HOLLYWOOD 3-5059



It pays to go by the book!

Naturally, this book is a "closed" one. Names of the brands of fine cosmetics and toiletries made by the Private Brand Division of Avon Products are held in strict confidence.

But, we *can* say they're names of great renown . . . and their example is worth remembering.

You, too, can gain the greater volume you are seeking on your established toiletries or cosmetics . . . or introduce new ones without added plant expense on your part . . . by entrusting your production to Avon.

Avon's position of leadership has been gained by the most faithful observance of the highest quality standards. Your products are assured the expert attention which distinguishes Avon's production of its own and other well-established private brands. Formula and product assistance of Avon specialists is available if you desire. Their knowledge and experience include every phase of cosmetics and toiletries production.

Call or write Avon for complete information concerning the production of your own brands of toiletries and cosmetics.

Avon Products INC.

PRIVATE BRAND DIVISION

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

Strategically located laboratories in Suffern, New York • Pasadena, California • Montreal, Canada

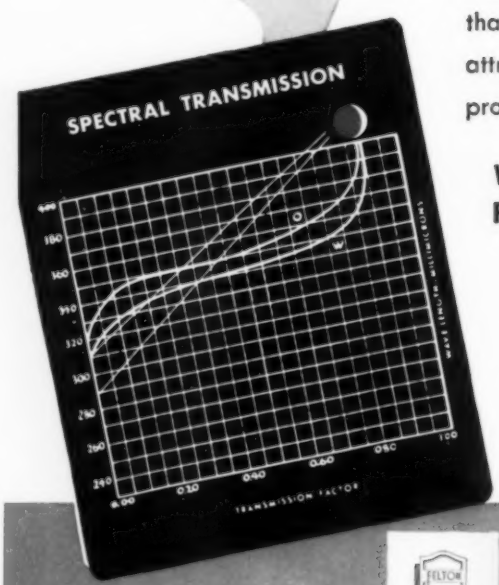
Has What It Takes—

TO MAKE THE BEST SUN-TAN PRODUCTS

FELTON Sunaromes®

"O"—OIL SOLUBLE "W"—WATER SOLUBLE

SUNAROMES PROTECT AGAINST THESE SUN-BURNING RAYS!



Perfect for Aerosol packing, too!

Just mix Sunaromes with the base you prefer . . . water-gum, water-alcohol, or even water alone. You can also use a cream base, mineral oil, fatty oil, etc. It's the Sunaromes that make them effective sun screens . . . and scent them so attractively. The protection is positive . . . and there is no problem of skin irritation.

WRITE TODAY FOR COMPLETE DATA, FORMULAS & SAMPLES WITHOUT OBLIGATION

- **SUNAROMES** completely screen out harmful rays of the sun between 2900-3100 angstrom units.
- **SUNAROMES** permit sufficient of the actinic rays to reach the skin for a beautiful and healthful tan.
- **SUNAROMES** combine a perfect and tested sun-screen and a wide choice of perfumes, soluble in all media, for easy and simple manufacture.
- **SUNAROMES** are economical to use.
- **SUNAROMES** are non-irritating to the skin and stable in the finished preparation.

SUNAROME Trade Mark Registered U. S. Pat. Off.

AROMATICS • PERFUME BASES • ESSENTIAL OILS

FELTON CHEMICAL COMPANY, INC.

599 Johnson Ave., Brooklyn 37, N.Y.

PLANTS: Brooklyn, N. Y. • Los Angeles, Cal. • Montreal, Que. Versailles (S & O) France—SALES OFFICES: Atlanta • Boston • Chicago Cleveland • Philadelphia • St. Louis • Toronto

Stock Carried in Principal Cities

spotlight on

crystalline structure

in stearic acid

how Emersol 132 Lily improved consistency and texture of medicinal cream

If your product's performance depends on its appearance, texture, and consistency, then this actual experience should prove helpful to you: *Case History No. 13-84 . . . Attracted by lower prices, this manufacturer of medicinal creams switched from Emersol 132 to a high-quality hydrogenated solid acid. Immediately, the non-crystalline structure of the latter product reflected in an objectionable change in the texture and consistency of the cream . . . substantially reducing its performance and sales-appeal. The switch back to crystalline Emersol 132 Lily eliminated all difficulties.* Likewise, the controlled crystalline composition of Emersol 132 will give your products the same desirable creaminess, texture and consistency time after time. This, coupled with outstanding resistance to rancidity, color stability and oxidation stability will make your products more appealing to customers, easier to sell. And since Emersol 132 costs no more than competitive triple-pressed grades, all these "extras" cost you nothing. Next time . . . buy Emersol 132 Lily.

Emery

Fatty Acids & Derivatives
Plastolein Plasticizers
Twitchell Oils, Emulsifiers

Emery Industries, Inc., Carew Tower, Cincinnati 2, Ohio

New York; Philadelphia; Lowell, Mass.; Chicago; San Francisco; Cleveland; Ecclestone Chemical Co., Detroit
Warehouse stocks also in St. Louis, Buffalo, Baltimore and Los Angeles
Export: 5035 RCA Bldg., New York 20, New York

For suntan cosmetics

use the two effective sunscreens:

FILTROSOL
A

Not water soluble.
For creams and oils.

FILTROSOL
B

Water soluble — for
emulsions and lotions.

We also have a full line of perfume compounds for suntan cosmetics. Write us for further information and samples.

schimmel & co., inc.

601 West 26th Street, New York, 1, N. Y.

1. AVAILABLE AS CRYSTALLINE TRITURATION—for easy handling, uniform distribution.

2. STANDARD POTENCY—One gm. of trituration equals 10 mg. of Crystalline Reserpine activity.

3. DEPENDABLE SUPPLY—Pfizer's long-range program assures your future requirements.

5 reasons why you can count on

4. APPROVED CLINICAL DATA—By using Pfizer Reserpine, you can refer to our clinical and safety data.

5. TECHNICAL SERVICE—you can benefit from our continuing investigation of the pharmaceutical aspects of Reserpine.

PFIZER FOR RESERPINE

Pfizer Crystalline Reserpine is offered as a 1% trituration with U.S.P. lactose, packed in 100 and 500 gm. amber s.c.b.... 1 and 5 kilo polyethylene-lined drums. Pure Crystalline Reserpine is also available. Write for Technical Bulletin 81 for assay data and other valuable information.

Manufacturing Chemists for Over 100 Years

Pfizer

CHAS. PFIZER & CO., INC.
Chemical Sales Division
630 Flushing Ave., Brooklyn 5, N. Y.
Branch Offices: Chicago, Ill.; San Francisco, Calif.; Vernon, Calif.; Atlanta, Ga.

the most

1. ECONOMICAL LIQUID FILLING MACHINERY AVAILABLE
2. UNLIMITED MANUFACTURING CAPACITY
3. FLEXIBILITY OF OPERATION
4. COMPLETE RESEARCH AND TESTING FACILITIES

Strong Cobb has the drop on the liquid pharmaceutical market

THE MANUFACTURING POLICY YOU WILL BE INTERESTED IN

You are invited to watch your product being tested and produced at **STRONG COBB** anytime during the period of its manufacture... no appointment is necessary..... come in and tell us you want to see your order being filled.

We invite you to discuss any idea or plan you have for a liquid product.

We offer you our **RESEARCH, MANUFACTURING, PACKAGING** facilities.

STRONG-COBB *Strong, Cobb & Company, Inc.*

2654 LISBON ROAD, CLEVELAND 4, OHIO TELEPHONE: SWEETBRIAR 1-0600

In New York: 745 Fifth Avenue, New York 19, N. Y.
In California: 12912 Chadron Avenue, Hawthorne, California
In Canada: Strong, Cobb of Canada, Ltd., 388 St. Paul Street, W., Montreal
American Chlorophyll Division, Lake Worth, Florida

PHARMACEUTICAL MANUFACTURERS TO THE TRADE - SINCE 1933

THINGS TO COME...WITH

Glycerine

BLOOD FOR TRANSFUSIONS... *banked for a year*

Imagine banking more blood in a year than has been shed by all American fighting men since Braddock's defeat.

That's how many red blood cells a new *Glycerine preservation process* promises to make available—from today's normal supply of donated blood.

Until now, it's been impossible to prevent red cells from spoiling after three or four weeks' storage.

But by suspending cells in Glycerine at subzero temperatures, scientists have successfully preserved them for over six months.

And banking for as long as one to three years—perhaps more—is a practical possibility.

The unique balance of properties that won such wide acceptance for Glycerine in the past continues to open *new* doors to chemical progress. In paints, foods, pharmaceuticals, packaging . . . for tomorrow's surge of new specialties . . . in formulations and reactions yet unknown. Nothing takes the place of Glycerine.

This balanced group of properties keeps Glycerine's usefulness growing

HYGROSCOPICITY • STABILITY • HUMECTANT •
SOLVENT POWER • VISCOSITY • NONVOLATILITY • CARRIER • SOLVENT • LUBRICANT • SOFTENER •
NONTOXICITY • TASTE • MW/HYDROXYL RATIO • EMOLLIENT • ANTI-FREEZE • ALKYD BASE •

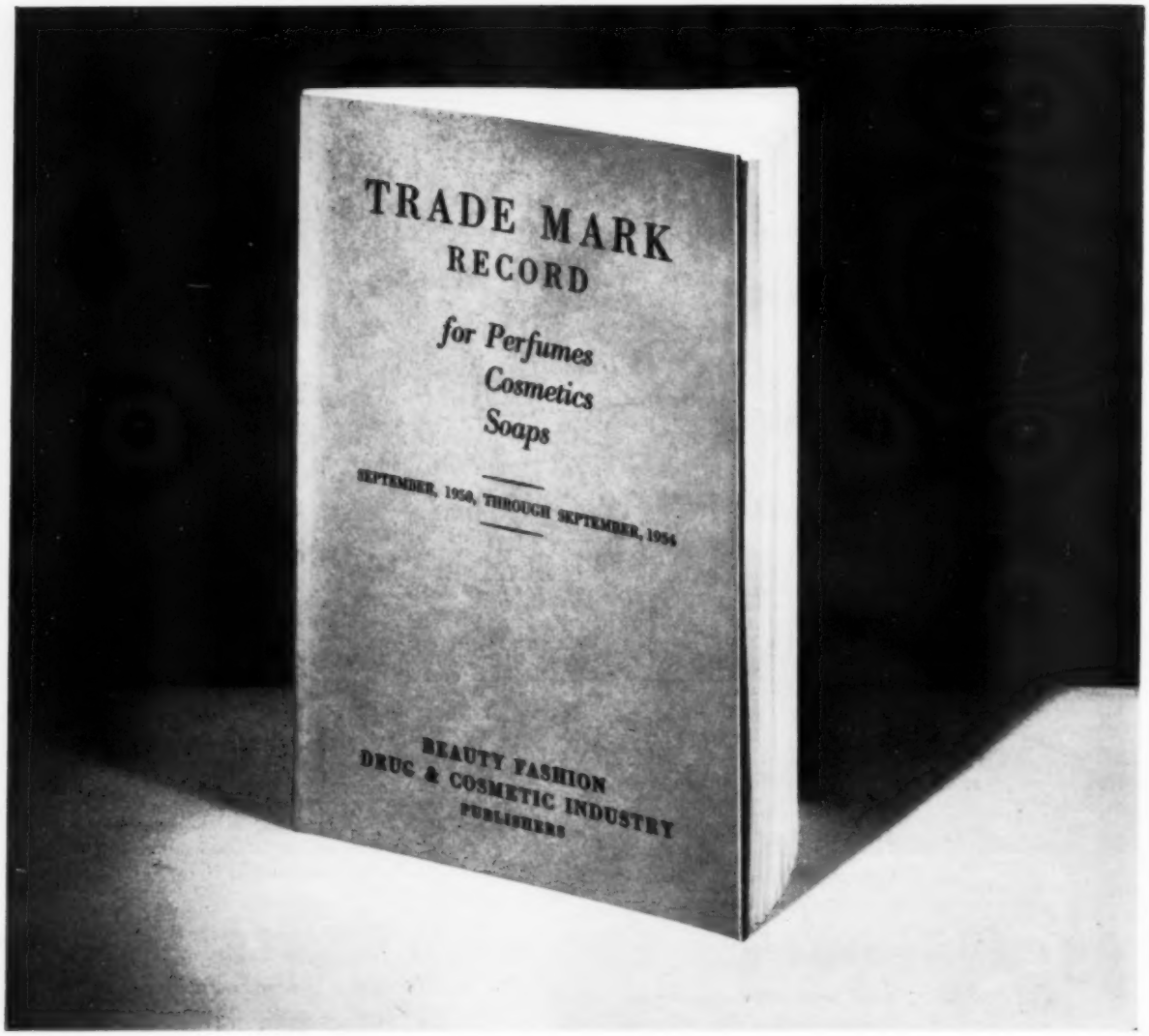
☑ CHECK AND SEND FOR TECHNICAL DATA

☐ 20-page booklet on Glycerine for product conditioning

☐ 12-page booklet on Glycerine standards and specifications

☐ 16-page booklet on Glycerine properties and applications

For your free copy of any or all of these booklets write: **GLYCERINE PRODUCERS' ASSOCIATION** • 295 Madison Ave., New York 17, N. Y.



ANNOUNCEMENT

The SECOND SUPPLEMENT to the Trade Mark Record for Perfumes, Cosmetics, and Soaps is now available.

This SECOND SUPPLEMENT brings the compilation of trade mark names up to October 1st, 1954.

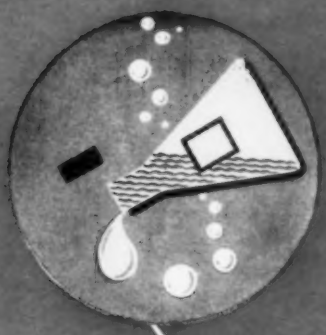
All who purchased a copy of the Trade Mark Record and the First Supplement will want to keep their trade name records up to date by ordering a copy of the SECOND SUPPLEMENT at once.

The price of the SECOND SUPPLEMENT to the Trade Mark Record is $5. postpaid. In New York City please include 3 percent sales tax with remittance.

Book Department
DRUG & COSMETIC INDUSTRY 101 West 31st St., New York 1, N. Y.

PASTE

WA-Paste, WAQ, WA-Special, smooth creamy texture, rich pearl lustre. For paste or liquid creme shampoos, rubber processing, textile cleaners, etc.



LIQUID

WAT . . . Triethanolamine neutralized, ideal for clear liquid shampoos, bubble baths, liquid dishwashing detergents.

stepanols LAURYL SULFATES

RIGID UNIFORMITY...
SUPERB COLOR

POWDER

Recommended for pharmaceutical, and cosmetic uses. Highest quality, purity, with rigid uniformity.

LABORATORY ASSISTANCE

Complete laboratory facilities are available to help you in developing your product.

Instantly Soluble
High Initial Foam
Close Bodied Creamy Foam
Excellent Foam Stability
Free Rinsing
Write for Literature and Samples

THE STEPAN CHEMICAL CO.

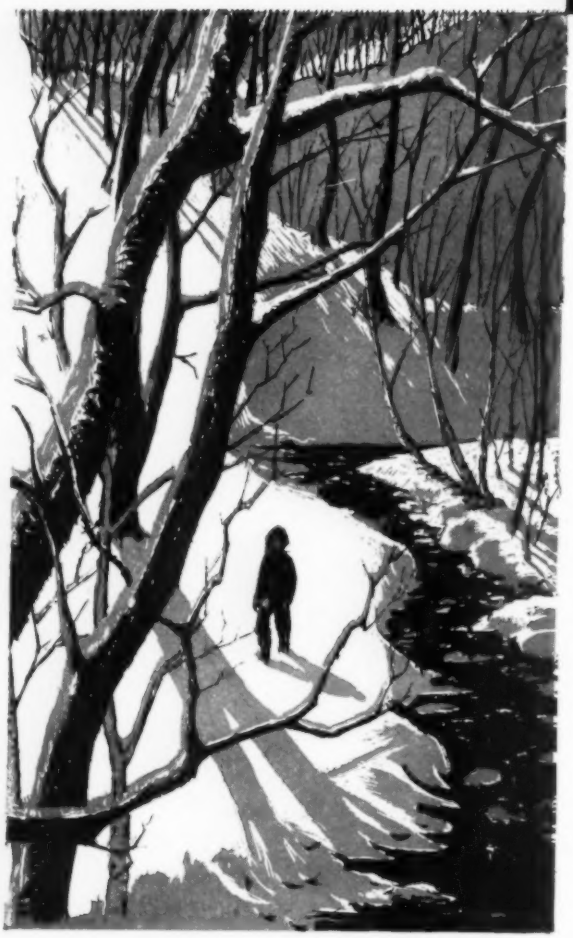
20 No. Wacker Drive
Chicago 6, Illinois
Telephone: Central 6-5511

N. Y. Q. has it...

BISMUTH

Pure ..... Bright

WINTRY-WHITE



A NEWLY IMPROVED PROCESS enables us to offer BISMUTH SALTS with a matchless white quality never before approached... purity that exceeds standard limitations!

SAMPLE THEM AND SEE . . . You'll find these BISMUTHS perfect for every pharmaceutical or cosmetic manufacturing use, every prescription requirement.

BISMUTH SUBCARBONATE-U. S. P.

BISMUTH SUBNITRATE-N. F.

BISMUTH SUBSALICYLATE-U. S. P.

DENSITY? *We will meet your special specification*

NYQ®

THE FULL LINE FINE CHEMICAL HOUSE

The NEW YORK QUININE & CHEMICAL WORKS, Inc.

50 CHURCH STREET, NEW YORK 8, N. Y.
729 WEST DIVISION STREET, CHICAGO 10, ILL.

The frame of *quality* and *value* symbolic of the CHARABOT label is more than a symbol . . . it is the keystone built on our constant desire to create the ultimate in olfactory perfection. Every moment of our 138 years has been dedicated to the relentless effort to provide the greatest *value* possible. Our reward is the respect of perfume artisans and craftsmen since the days of Napoleon.

Quality and value are part of every product offered by CHARABOT . . . headquarters for all Natural Products, Florals, Essential Oils and Specialties.

GRASSE
NEW YORK
PARIS

Sole distributors in the U. S. and Canada for CHARABOT & CIE., successors to HOUBIGANT, Grasse, France

CHARABOT & CO INC

132 NASSAU ST. NEW YORK 38, N. Y. REctor 2-5040

Your beauty preparations will offer

Cleanliness That Clings

with G-11®

(Brand of Hexachlorophene)

Cleanliness that clings—the continuous hour-after-hour degerming action of G-11—is the secret of success behind many leading soaps, creams, lotions and other beauty products.

G-11 provides protection against bacteria *between washings*. It leaves a microscopic anti-bacterial deposit that does not rinse off but stays on to stop the growth of trouble-making germs deep in the skin. It is easy to incorporate into your formula.

For users of your products, G-11 means fresher, cleaner skin, better protection against skin blemishes, and effective deodorizing action. May we tell you more about the sales- and profit-making benefits of G-11?

SINDAR® Corporation

Industrial Aromatics and Chemicals

330 West 42nd Street • New York 36, N. Y.

Branches: Philadelphia • Boston • Cincinnati • Detroit
Chicago • Atlanta • Seattle • Los Angeles • Toronto

"If any of these are good for ulcers, cancer, high blood pressure, or just plain billiousness, I could use a thousand tons."

Keeping Posted

Tetracycline Patent to Pfizer

A patent on tetracycline was issued January 11 to Chas. Pfizer & Co. by the U. S. Patent Office. The patent includes 18 claims covering the manufacture, use, and sale of tetracycline and its salts, as well as processes for their manufacture, and antibiotic compositions containing these materials. This action by the Patent Office marks the end of a series of interference proceedings which delayed issuance of a patent on tetracycline for an extended period of time. The controversy over this patent extended through two successive interference proceedings in the Patent Office.

In February, 1951, the Lederle Laboratories Division of American Cyanamid Company conceded priority to Pfizer in settlement of the first patent interference and Lederle received a license under Pfizer's patent rights as part of the settlement agreement. In the same agreement, Pfizer received from Lederle a license to use Lederle process for the production of Aureomycin (chlortetracycline) for use as a raw material for the production of tetracycline. Subsequently, a second interference involving Bristol Laboratories was declared, but this terminated in October, 1954, by a decision of the Patent Office. The issuance of the patent to Pfizer gives official recognition of Pfizer's discovery of tetracycline.

On the day the patent was issued, Pfizer announced the institution of legal proceedings against Bristol Laboratories, E. R. Squibb, and the Upjohn Company for infringement of the patent, asking for treble damages and an injunction to prohibit unlicensed manufacture and distribution of the product.

Two days after the patent was issued to Pfizer announcement was made of the settlement of the suit brought a short time ago by American Cyanamid Company against Bristol Laboratories claiming that Bristol was infringing the 1949 Aureomycin (chlortetracycline) patent in Bristol's fermentation process for production of tetracycline. This suit was brought very shortly after Bristol Laboratories started to supply Squibb and Upjohn with tetracycline. The settlement grants to Bristol Laboratories a world-wide non-exclusive license under the Aureomycin patent which allows Bristol Laboratories to make tetracycline by the direct fermentation they have been using. Bristol agreed to pay royalties for past infringement and for future use of the patent rights.

However, even though Bristol Laboratories has obtained the right to make tetracycline under an existing valid patent, the Pfizer patent is the basic tetracycline patent and prohibits Bristol or anyone else from distributing and selling tetracycline. Therefore, as long as Bristol Laboratories, Squibb, and Upjohn distribute and sell tetracycline, they are infringing the Pfizer patent. In the suit brought by Pfizer against these three companies, the defendants will undoubtedly attack the validity of the patent, claiming that it never should have been issued.

Rule on Certified Colors

The Department of Health, Education, and Welfare issued "Notice of Proposed Rule Making" on December 29, last, in which certified coaltar colors FD&C Orange No. 1, FD&C Orange No. 2, and FD&C Red No. 32 are withdrawn, but are reissued as EXT D&C colors, which means that they can no longer be used in any foods, and can be used only in drugs and cosmetics which are applied externally. In reclassifying these three colors, FD&C Orange No. 1 becomes EXT D&C Orange No. 3; FD&C Orange No. 2 becomes EXT D&C Orange No. 4; and FD&C Red No. 32 becomes EXT D&C Red No. 14. The notice gave interested parties 30 days to file exceptions to the proposed regulation. In the findings of fact given in the notice, the statement is made:

"The results of pharmacological tests, conducted by qualified investigators using recognized scientific methods, establish that the colors are not harmless substances but on the contrary are definitely toxic and exert pronounced physiological effects on body tissue. The experimental work on man is limited, and except for Orange 1, adverse effects on man have not been definitely confirmed."

It will be recalled that when this subject was first brought up by the Food and Drug Administration, the proposal was to eliminate these colors altogether. However, the Toilet Goods Association was most insistent in its contention that these colors be retained for external use. Several drug manufacturers also appeared to back this plea which has been granted.

Ilaron

A new quality of alpha iso methyl ionone.
Its splendid orris-violet odor will
impart vibration to your compositions.

POLAK & SCHWARZ

Unexcelled
quality

Ask for our pricelist for aromatic chemicals

Polak & Schwarz Inc., 667 Washington Street, New York - 14 (N.Y.)

Retailer Sues Manufacturer on Fair Trade

A change-about in fair trade suits occurred last month when Harry Brown, operator of a jewelry store at 620 Nostrand Avenue, Brooklyn, brought suit in New York's Supreme Court against the Bulova Watch Company, asking $20,000 damages as well as a court order forcing Bulova either to enforce its fair trade contracts with retailers or abandon the agreements. Mr. Brown bases his plea for damages on allegations that Bulova sold its merchandise to known price-cutters. He maintains that, because he held to the letter of his contract with Bulova, he couldn't compete with price-cutting rivals in other stores and had to stop selling Bulova products.

Management Awards

Five drug manufacturers were awarded Certificates of Management Excellence for 1954 in the sixth annual management survey by the American Institute of Management. These are: Abbott Laboratories; Parke, Davis & Company; Chas. Pfizer & Co.; G. D. Searle & Co.; and Smith, Kline & French Laboratories. A total of 379 American and Canadian firms received the award for 1954 after a continuing study of the operations of thousands of companies. It is explained that the Institute examines a management in the areas of: economic function, corporate structure, health of earnings, fairness to stockholders, research and development, directorate analysis, fiscal policies, production efficiency, sales vigor, and executive evaluation. The minimum rating for excellence on the Management Audit point scale is a total of 7,500 points or more of the optimum of 10,000, with minimums satisfied for each of the ten categories.

Swing to Botanicals

The claims advanced in the past for the virtues of herbal drugs were almost limitless, says the DiCyan & Brown Bulletin, but the successes of chemotherapy are truly unparalleled in the history of medicine. The synthesis and utilization of synthetic organic chemicals in therapeutics have changed many areas in human endeavor. In fact, chemotherapy has influenced the geographic aspects of many lands, for it has reclaimed areas, as for example in Africa, parts of which were almost uninhabitable due to the presence of trypanosomiasis, encephalitis, malaria or other diseases.

The original use of herbal drugs, says the bulletin, was based on premises that had their origin in animism and magic. Rauwolfia was known in India for some centuries. Though sold by street vendors with supernatural claims, it was later used by reputable Indian physicians—with little interest shown therein by the West. It is the belief in open-minded investigation, not the belief of the drug *per se*, that has brought rauwolfia, and subsequently reserpine, to the Western world. It is entirely possible that many worthwhile drugs of herbal origin lie untested and unknown, in Asia, or in Africa which is rich in herbal materials used in medicine. Africa, the paradise of cultural anthropologists, is a pharmacopoeial wonderland, continues the bulletin. Its varied aboriginal population, among which are Zulus, Xosas, Chopis, Tongas, Sutos, Fingos, Bantus, and Hottentots among other tribes, has its unique therapeutic practices. It is probable that one or more of herbal drugs used by the African aborigines, may be unknown to the Western world, though it may have been botanically classified.

Report on Artificial Sweeteners

In a report made to the Food and Drug Administration, the National Research Council recommended that the FDA tighten its controls over distribution of foods containing artificial sweeteners to minimize alleged misrepresentation and misuse of these chemical additives by the consuming public. Specific attention was given in the report to saccharin and the cyclohexylsulfamates (Sucaryl).

The Food and Nutrition Board of the Council concluded that recognition must be given to the usefulness of safe artificially sweetened foods for diabetics, but added that there is no clear evidence that the availability to, and consumption by the general public of artificially sweetened foods would be effective for purposes of body weight reduction or control.

It was also concluded that the physiological harmlessness of saccharin at levels of maximum probable intake has been established, but the physiological harmlessness of the cyclohexylsulfamates at levels of maximum probable intake has not been assured. The primary probable hazard, it was added, appears to come from the use in soft drinks available for general public consumption.

Estimates given to the Council by the manufacturers state that about 420,000 pounds of Sucaryl and 481,000 pounds of saccharin were used as sweeteners in fruits and beverages and by the drug industry during 1953. Since Sucaryl is not as sweet as saccharin, the Sucaryl used in 1953 was equivalent to only 6,300 tons of glucose, while the saccharin used in that same year was equivalent to 96,200 tons of glucose. This means that saccharin is 400 times, and Sucaryl 30 times as sweet as sugar. About one-half of one per cent of the soft drinks, and about 2.3 per cent of the canned fruits packed in 1953, was artificially sweetened.

Drug Sale Restriction Battle

The battle between the Proprietary Association and the National Association of Retail Druggists and others interested in maintaining present restrictions of the sale of drug products to retail drug stores waxes hotter. John W. Dragavel, executive secretary of the N.A.R.D., sent a bulletin to the presidents and secretaries of the state, district, county, and metropolitan pharmaceutical associations describing some steps being taken by the Proprietary Association.

One of the steps described is proposed enactment of an amendment to the North Dakota Pharmacy Act "to broaden the exemptions of the act to make it legal to sell all packaged medicines in outlets of every kind, food stores, wagon peddlers, agents, etc., except the drugs which must bear the federal caution label."

Such a step, says Dr. Dargavel, "would achieve more in North Dakota, and in other states where enactment of similar legislation might be accomplished, than the

SCANDIA

Milady, ever appreciative of the finer things, looks to Scandia for the enhancement of her beauty. She knows and trusts this fine brand of creams, lotions, and other essential aids to loveliness — and Scandia sales prosper. For Scandia knows that a quality product deserves — yes, *demands* — a quality package.

And so Scandia looks to Colt for the enhancement of its products, through custom-molded jars and closures. It knows that this custom molder offers a complete service for the successful solution to *any* plastic packaging problem. And those looking for stock items too, find satisfaction from this versatile plastics molding center, with its extensive experience and facilities. Why don't you?

COLT

COLT'S MANUFACTURING COMPANY • PLASTICS DIVISION • HARTFORD 15, CONNECTICUT

Proprietary Association sought to accomplish in the lawsuit against the New Jersey State Board of Pharmacy."

There has been no restrictive legislation in Iowa concerning the sale and distribution of "patent, proprietary and domestic remedies." In attempting to procure legislation to confine sales of medicinal product to pharmacists, the Iowa Pharmaceutical Association found out that this was impossible. Therefore, the I.P.A. has yielded to a provision which defines "patent, proprietary remedies" as including "completely compounded packaged drugs, medicines, medical and dental supplies and nonbulk chemicals labeled with directions for use, identified by and sold under a trademark, trade name or other trade symbol, privately owned or registered in the United States Patent Office, which are sold or offered for sale to the general public." The provision specifically exempts from the definition drugs restricted to prescription. Tied up with this is a provision which requires a retailer selling "patent, proprietary or domestic remedies" to be licensed.

Drugs and Mental Disease

Just a little over a year and a half ago, or in June, 1953, we published a piece in which we commented on the thought that mental diseases could be controlled by drugs, at least to some extent. We also expressed the opinion that "the continual expansion of facilities for confining mental cases is a disgrace to our mental and pharmaceutical professions." Our comments were prompted by a report on results obtained in India by Dr. Hakim with native drugs of India, one of which was rauwolfia serpentina. We told of the results obtained by Dr. Hakim, a practitioner who belongs to the Western school. This report, which came to us through the New York Times of May 31, 1954, told that Dr. Hakim had treated 146 patients—some with electric-shock therapy, some with the drugs, and some in both ways. Electric-shock therapy gave a recovery rate of 31.11 per cent; drug therapy gave a recovery rate of 51.66 per cent; and a combination of both therapies gave a recovery rate of 80.48 per cent for the 146 as a whole. Fortunately for the mentally disturbed people of this nation, the pharmaceutical manufacturers became interested in rauwolfia serpentina, because of its possibilities in the treatment of hypertension. As is common in the development of products of this sort, not only was the whole root used, but also an extract of the root, and also the isolated main alkaloid of the root—reserpine.

Due to the clue given by Dr. Hakim's work in India to the medical profession and pharmaceutical industry in this country, reserpine has been under test in certain mental institutions. One of these institutions is Rockland State Hospital, Orangeburg, New York. Last December 30, Dr. Nathan S. Kline, director of research at Rockland State Hospital reported on his work with reserpine to the members of the American Psychiatric Association at a conference of the American Association for the Advancement of Science at the University of California in Berkeley. Dr. Kline reported on the results of an intensive study initiated in 1953, which includes two types of treatment with reserpine covering 700 patients in each test group.

Dr. Kline reported that reserpine has produced excellent results in the treatment of neurotic and psychotic patients, especially in severe cases of schizophrenia. Referring to specific results, Dr. Kline said that in the case of 150 chronically disturbed psychotics who had failed to show improvement on either or electric-shock therapy, 84 per cent improved and 21 per cent were ready for release at the completion of three to four months of treatment with reserpine. The majority of patients in the current study were schizophrenics, who make up between 58 and 59 per cent of the mental hospital population in New York State. As most of these patients have been hospitalized for five years or more, the over-all expectation of discharge, said Dr. Kline, is less than 21.3 per cent. He contrasted the general rate of discharge of patients from April, 1953, to April, 1954, of 4.7 per cent with a discharge rate of 21.3 per cent for patients who were ready for release after only four months of treatment with reserpine this year.

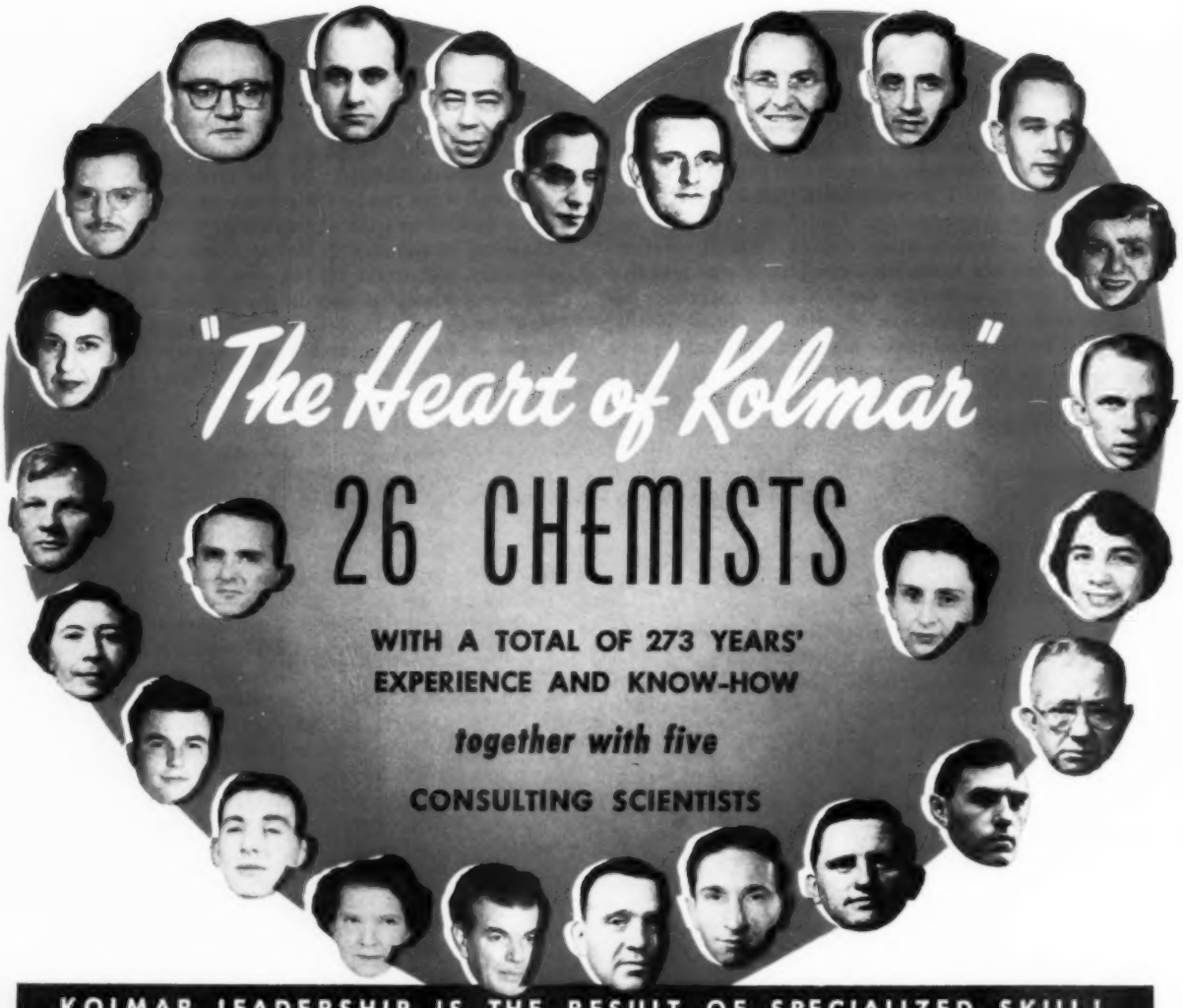
"Of even greater significance," said Dr. Kline, "is the fact that these patients were the ones who had failed on other types of treatment and were among the poorest prospects for improvement in the hospital." He pointed out that "even if considerably less than 21.3 per cent of patients could ultimately be discharged each year as a result of reserpine treatment, it would mean a tremendous saving to the taxpayer and more important, saving in human misery and disruption."

In addition to reserpine, Thorazine (chlorpromazine hydrochloride), a product of Smith, Kline & French, is finding intense application in the treatment of mental disease. This product—a chemical of the antihistaminic family—discovered in France, was originally introduced because of its powerful selective effect against nausea and vomiting, and proved very effective in the vomiting of pregnancy, as well as in nausea and vomiting as caused by cancer, uremia, and irradiation therapy. However, it was also found to be most effective in controlling severe agitation and acute anxiety such as occur in manic-psychosis, schizophrenia, and senile psychosis.

Therefore, it would appear that the door to the treatment of mental disease by means of drug products has been opened. Certainly the medical profession of this country will not be backward in the application of these new methods of treatment. Furthermore, the pharmaceutical manufacturing industry will not be slow in following this clue to the development of more, and most likely, still better products for the treatment of mental diseases. This step forward in medicine can easily prove to be one of the most important ever taken.

Sixth Franchise on Chlorpactin

Guardian Chemical Corporation has issued the sixth franchise for use of one of its grades of Chlorpactin (hypochlorous acid) in a specific field of medicine. The latest franchise is to Kilmer & Company, Stamford, Connecticut, for exclusive distribution of and sale of Chlorpactin WCS-50 for treatment of Athlete's Foot and similar fungus conditions of hands and feet. Tests of the product are proceeding in a great number of ethical fields such as gynecology, urology, and major surgery.


"The Heart of Kolmar"
26 CHEMISTS
WITH A TOTAL OF 273 YEARS' EXPERIENCE AND KNOW-HOW
together with five
CONSULTING SCIENTISTS

KOLMAR LEADERSHIP IS THE RESULT OF SPECIALIZED SKILL!

♥ The "Heart of Kolmar" provides continuous creative research and thorough testing at every step of the manufacturing process . . .

♥ It provides the control of quality from raw material to finished product . . .

♥ It has given Kolmar product superiority and uniformity, combined with favorable price . . .

♥ It has enabled Kolmar to develop many of the best known products in the cosmetic field . . .

♥ It constantly works for the improvement of existing methods and formulae, and the development of new ones.

♥ It has won Kolmar recognition *as America's Leader in Private Label Cosmetics.*

The customer's rights in the formula under which he operates is always respected by Kolmar. Consultation will not obligate you and there's a Kolmar Laboratory or Representative near to give you prompt service at all times.

•

Kolmar Products include Lipstick, Dry and Cream Rouge, Loose Face Powder, Cake Make-Up, Compact Powder, Foundation Creams, Liquid Make-Up, Eye Shadow, Mascara, Lotions, Colognes, Perfumes and other cosmetics.

•

REPRESENTATIVES: DOUGLAS HAGGERTY; THOMAS LA PRELLE, EASTERN SALES MANAGER, EMPIRE STATE BLDG., ROOM 605, NEW YORK, N Y.; WARREN M. CURRY, 599 PLUM ST., N. W., ATLANTA, GA.; NORMAN L. KOLE, 505 NORTH LA SALLE ST., CHICAGO, ILL.; J. C. WEILER, 8003 FORSYTHE BLVD., ST. LOUIS 5, MO.; R. F. G. BYINGTON, 1260 N. WESTERN AVENUE, LOS ANGELES, CALIF.; RICHARD F. SPICKER, 419 W. FIFTH ST., CINCINNATI, OHIO; ELMER J. SCHWARTZ, 10016 EAST 35TH TERRACE, KANSAS CITY 3, MO.

Kolmar LABORATORIES

MILWAUKEE 2, WISCONSIN

PRIVATE LABEL COSMETICS EXCLUSIVELY

KOLMAR COSMETIC SPECIALTIES, INC. (complete package division) • KOLMAR INTERNATIONAL, INC. • WICKHEN PRODUCTS, INC.

PLANTS IN PORT JERVIS, NEW YORK; TWO PLANTS IN MILWAUKEE, WIS., AND ONE IN HOLLYWOOD, CALIF.
CANADA: KOLMAR WILCKENS, LTD., PLANT IN BARRIE, ONTARIO; OFFICE: 205 YONGE ST., TORONTO, ONT.
AUSTRALIA: KOLMAR (AUST.) PTY. LIMITED, 494 KENT ST., SYDNEY; KOLMAR EUROPE: PARIS, FRANCE

Food and Drug Act Committee

Robert A. Hardt, vice-president of Hoffmann-La Roche, and president of the American Pharmaceutical Manufacturers Association; Walter Silbersack, president of American Home Products Corporation; and H. Gregory Thomas, president of Chanel, Inc., are members of a committee of fourteen persons created to study enforcement of the Food, Drug, and Cosmetic Act. A special appropriation of $21,000 was voted by the last Congress. The first meeting was held February 3 in Washington, D. C.

Charles Wesley Dunn, general counsel of the American Pharmaceutical Manufacturers' Association and the Grocery Manufacturers of America, and also president of the Food Law Institute, as well as chairman of the Section on Food, Drug and Cosmetic Law of the New York State Bar Association, is another member of the committee with a real interest in this industry. Mrs. Oveta Culp Hobby, Secretary of Health, Education and Welfare, said the committee members were chosen "for their interest in civic affairs and broad knowledge of consumer and industry problems.

The chairman of the fourteen-member committee is G. Cullen Thomas, vice-president of General Mills, Inc. Other members are: Miss Catherine Dennis, president, American Home Economics Association, Raleigh, N. C.; Mrs. Grace Drexler Nicholas, executive director, General Federation of Women's Clubs, Washington; Patrick T. Stone, U. S. District Judge, Wausau, Wis.; Frank W. Abrams, former chairman of the board, Standard Oil Company, New York; Dr. Harry Dowling, Professor of Medicine, University of Illinois, Chicago; Dr. Leonard A. Maynard, director, School of Nutrition, Cornell University, Ithaca, N. Y.; Lee W. Minton, president, Bottle Blowers Union, A.F.L., Philadelphia; Dr. Charles F. Poe, dean, College of Pharmacy, University of Colorado, Boulder; H. N. Riley, executive vice-president, H. J. Heinz Company, Pittsburgh.

Eastman May Employ Fair Trade

Eastman Kodak Company may lawfully continue to fair-trade its products at retail in states having fair trade laws, even though Eastman operates 35 retail outlets which compete with some 75,000 other retail outlets dealing in the same fair-traded products produced by Eastman. This was an unanimous decision of four commissioners of the Federal Trade Commission which upheld the decision of the hearing examiner and dismiss the complaint brought by the Commission against Eastman. Commissioner Lowell B. Mason did not participate in the decision.

For the year 1951, says the Commission, Eastman's net sales totaled $542,824,000, of which $111,737,000 (slightly less than 21 per cent) represented sales of fair-traded products. The total net sales of company-owned stores amounted to $34,806,000, of which $3,104,000 (approximately nine per cent) represented sales of fair-traded products. Net sales of Eastman's amateur products by other retail outlets was $154,769,000, of which $108,632,000 (about 70 per cent) represented sales of Eastman's fair-traded products. Sales of such products by the company-owned stores amounted to less than three per cent of the sales of fair-traded products by other retail outlets and less than 0.6 per cent of Eastman's total sales.

Of the 75,000 outlets handling Eastman fair-traded merchandise, approximately 10,000 are retailers whom Eastman sells direct. In its decision, the Commission took judicial notice of the fact that many manufacturers are partially integrated and also engaged in wholesaling or retailing. The volume of direct selling has also reached tremendous proportions, said the Commission. It was noted in the decision that, in fact, the practice of selling through "regular channels" of distribution is almost becoming the exception. "Sound business," the opinion continued, "or economic reasons may justify such methods of distribution." This practice was well known and generally accepted at the time Congress considered the Miller-Tydings and McGuire Acts, said the opinion, and the presumption is that Congress is not acting in a vacuum but is fully informed on contemporaneous conditions of common knowledge.

Trade marks in 1954

Trade marks registered by the U. S. Patent Office during 1954 totaled 15,939, making the total of trademarks on record in Washington 544,992, according to the U. S. Trademark Association. Interesting trademark decisions of the past year, cited by the Association, are: Cornell University obtained an injunction against use of "Cornell" and "Cornell Loaf" by a Brooklyn bakery selling bread baked to a formula developed at the University. The Patent Office held "Klen-Tex" for cotton wiping cloths confusingly similar to "Kleenex" for paper tissues. "Zurabond" for abrasive wheels was held too similar to "Durabonded" for coated abrasives. The use of "Mighty Mite" for children's garments was enjoined because it infringed the mark "Nitey Nite" used to identify children's sleeping garments.

"Copper Tan" and "Coppertone" were held similar for sun lotions. In other fields, marks held to be similar included: "Springfoam" and "Springstep," "The Lone Rider" and "The Lone Ranger," "Dear to Me," and "Endearing," "Salad Queen," and "King Salad," and "forbidden Love" and its French translation, "Le Fruit Defendu." Both of the last perfume marks remain registered, however, pending additional evidence. A 1954 U. S. Circuit Court decision, however, upheld the right of P. Lorillard Company to name its filter-tip cigarette "Kent" over the objections of G. B. Kent & Sons, Ltd., maker of "Kent" brushes in England since 1777. Lorillard men testified the cigarette was named for Herbert A. Kent, a company executive, and that they did not hear of the brushes until afterward. Evidence showed that the English company spent less than $50,000 a year advertising its brushes while Lorillard advertising introducing the filter-tip cigarette amounted to $1,550,000.

"Beco" for drapery hardware was ruled entitled to registration over opposition of the owners of "ekco" for kitchen cutlery, and "Red Dot" for dairy products was granted registration over the opposition of the owner of "Red Dot" for potato chips. "Railbird" and "Game Bird" were found not to conflict in the hat field. "Histapro" for antihistamine tablets was found not to con-

flict with "Histapon," an ulcer remedy. "Scotch Blend" was found not to be similar to "Scotch Mist" or "Scotchmoor." In perfumes, "Joyeuse Nuit" was ruled not similar to "La Joie de Jean Patou" or "Joy."

Probably the most significant decision of the Patent Office, says the association, was the Assistant Commissioner's ruling in Ex Parte Caron Corporation. It was held that a perfume bottle, identical with a bottle shown in a design patent issued in 1929 for a term of 14 years, was registerable on the Supplemental Register as a result of exclusive use as a distinguishing mark for a period of years after the expiration of the patent.

Glycerine Research Awards

Eight research scientists shared the 1954 Glycerine Research Awards last month. The first award of an honor plaque and $1,000 honorarium went to Professor Robert K. Summerbell of Northwestern University, and Dr. James R. Stephens of American Cyanamid Company for their proof of the structure and configuration of a number of well known glycerine derivatives and some related chemical compounds. They proved the structure and configuration of 2,5- and 2,6-disubstituted dioxanes, all derivatives of the cyclic doethers of glycerine, thus establishing the configuration of diglycerol, diepichlorohydrin, diepiiodohydrin and other derivatives. Several new derivatives including potentially important dicarboxylic acids were also prepared and studied.

Two teams of chemists shared the second award of honor certificate and $300 stipend for establishing independently the biological asymmetry of glycerine, i.e., the manner in which certain enzymes act preferentially upon one of the apparently identical end carbon atoms in the glycerine molecule in biological processes as they convert the compound into other chemical substances. This work is of value research chemists and medical men, especially biochemical investigators concerned with how the body converts and utilizes—motabolizes—glycerine and similar organic materials.

Dr. Robert W. Swick and Akira Nakao formed one team carrying out this work at the Argonne National Laboratory, Lemont, Ill. The other team was composed of Drs. Harland G. Wood and Per Schambye of Western Reserve University, Cleveland, and Dr. G. Popjak, National Institute for Medical Research, Mill Hill, London.

A new, simple method of transfusing thawed red blood cell-glycerine mixtures directly into the veins was granted the third award of honor certificate and $200 stipend. This development, the work of Dr. Henry A. Sloviter, School of Medicine, University of Pennsylvania, Philadelphia, may make practical prolonged storage and stockpiling of erythrocytes (red blood cells) at low temperature for use in case of national emergency.

Aerosols in Drug Stores

Hair lacquers were the best-selling item among aerosol cosmetics, with the drug stores estimating that 81 per cent of the sale were made in self-spraying containers, according to the eighth annual Du Pont study, conducted last September in 61 cities across the nation.

Aerosol sales percentages of other cosmetics included: shave cream 48; sun tan sprays 26; colognes and toilet waters 14; hair shampoos 13; and sunburn preparations 17.

According to the survey conducted by du Pont's Kinetic Chemicals Division, 99 out of 100 metropolitan drug stores carried aerosol products. While practically all aerosol products normally carried by such outlets showed gains over the last two years, the best sellers were insecticides, room deodorants, mothproofing agents, and hair lacquers. Druggists like aerosol products, with 87 per cent of them pointing out the favorable consumer demand, easy-to-merchandise features, and good per-unit profit.

Eaton Laboratories Grant

Eaton Laboratories announces a grant of $1,500 for a study of urinary tract infections in pregnancy under Dr. Nicholson J. Eastman, obstetrician-in-chief at Johns Hopkins Hospital. Firadantin, an antibacterial urinary agent, is the first of the nitrofurans developed for systemic use and a determination of its effectiveness in such infections will be included in the study.

Lilly Research Grants

Eli Lilly and Company has issued grants to support research projects as follows:

Research on hydroquinoxalines by Dr. H. Smith Broadbent, professor of chemistry at Brigham Young University. Research program in the department of pharmacology under the direction of Dr. James G. Foulks, professor of pharmacology at the University of British Columbia. Renewal grant to support research on insulin and related subjects under the direction of Dr. M. E. Krahl, department of physiology, University of Chicago. Clinical studies of the effect of drugs—in particular, Paveril Phosphate (dioxyline phosphate, Lilly) and papaverine—on the perfused mammalian heart by Jane Sands Robb, M.D., department of pharmacology, College of Medicine, State University of New York.

Cytochemical, cytological, and cytogenetic studies on the site of action of the antibiotics and other drugs in bacteria and other cells by Edward D. DeLamater, M.D., research professor, department of dermatology and microbiology, School of Medicine, University of Pennsylvania. Grant to continue work on barbituric acids under the direction of Dr. J. J. Spurlock, professor of chemistry, department of chemistry, North Texas State College. Study of anticonvulsant drugs by Louis S. Goodman, M.D., department of pharmacology, College of Medicine, University of Utah. Study of *Malleomyces pseudomallei* by Philip Pizzolate, M.D., assistant chief, laboratory, Veterans Hospital, New Orleans. Clinical studies on evaluation of oxytocics with relation to effectiveness and incidence of side-effects, especially changes in blood pressure, by Drs. Alan C. Barnes and Robert A. Hingson, School of Medicine, Western Reserve University. Insulin research under Dr. W. F. H. M. Mommaerts, and study of biosynthesis of nucleotides under Dr. Harland G. Wood, chairman, department of biochemistry, School of Medicine, Western Reserve University.

ATLAS chem-memos

CHEMICALS DEPARTMENT
ATLAS POWDER COMPANY, WILMINGTON 99, DELAWARE
ATLAS POWDER COMPANY, CANADA, LTD., BRANTFORD, CANADA

Atlas lanolin derivatives offer advantageous ways of obtaining emollience

Lanolin, long recognized for its superior emollient effects, is not the easiest material in the world to use. It is highly lipophilic . . . that is, it dissolves readily in oils . . . but does not give stable dispersions in water.

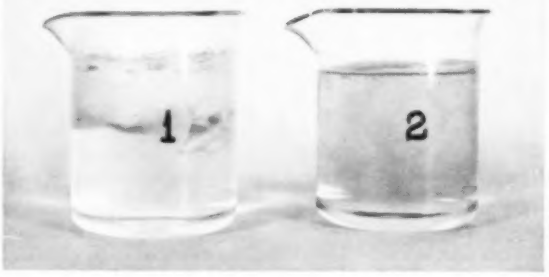
To overcome this inherent limitation, Atlas produces a line of lanolin derivatives with a range of solubility characteristics. Some are more oil-soluble than lanolin itself. Others are readily dispersible in water. The net result is that you can now include lanolin in derivative form in either O/W or W/O types of cosmetic preparations. The derivatives, it has been found by test, provide emollient effects similar to that of lanolin itself.

In O/W emulsions, the derivatives can be used as the sole emulsifiers, either with or without lanolin. Or they can be used as auxiliary emulsifiers to supplement beeswax or stearate soaps or other surfactants . . . either with lanolin, or by themselves as the sole source of lanolin.

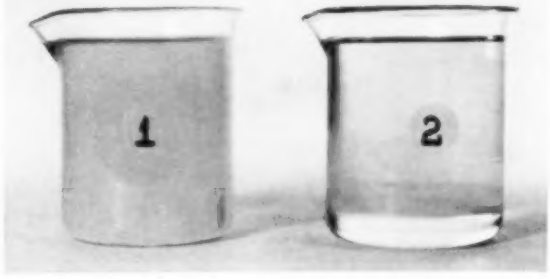
In W/O emulsions, these materials can be used with lanolin to assist emulsification and reduce the need for homogenization or milling.

The lanolin derivatives can be used in hair dressings, both as a source of lanolin and as a means of solubilizing essential oils, either with or without alcohol.

For technical data and samples for experimentation, write or call Atlas Chemicals Department today.



At left, lanolin dispersed in hot water separates out on cooling. At right is a clear dispersion of an Atlas derivative.



In mineral oil, lanolin gives a cloudy dispersion (left), while (right) Atlas derivative in the same oil is clear and transparent.

Cosmetics to match pH of the skin made with Atlas emulsifiers

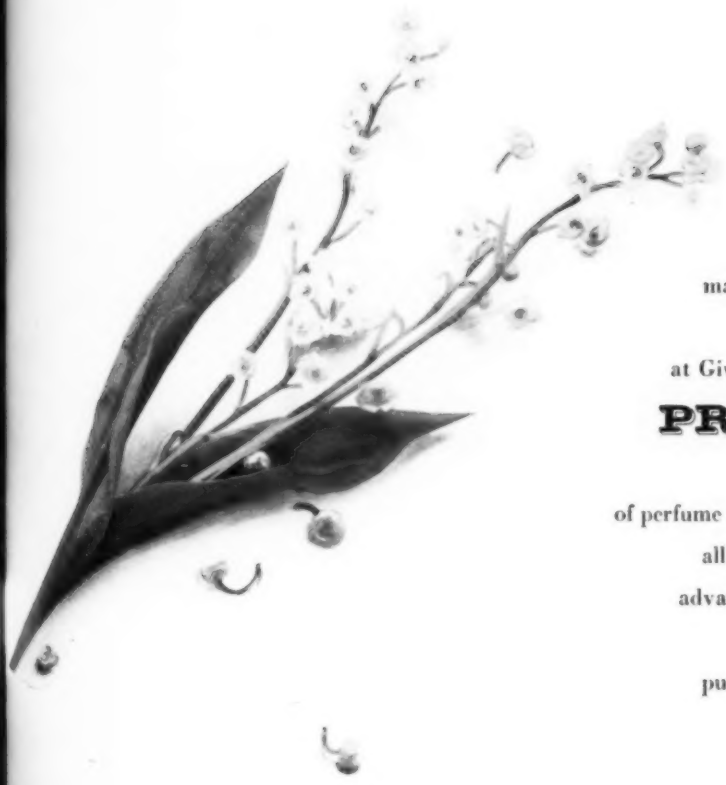
Certain cosmetic specialists have recommended adjusting the pH of cosmetic creams to match that of the human skin. A healthy skin, they maintain, has a slightly acid surface coating with pH between 3 and 5. Alkaline materials in contact with the skin may disturb this layer, breaking down the natural protection of the acid surface and allowing bacterial invasion. Creams matching the skin pH promote a favorable skin condition, it is pointed out.

When a cream is emulsified by means of conventional soaps, it is not possible to introduce acidic ingredients and thus adjust the pH to a matching value. The acid would, of course, react with the soap and impair the emulsion. By using Atlas non-ionic emulsifiers, creams can be readily made that remain stable when mild acids . . . citric, lactic, etc. . . . are added. In the pH range usually desired, the Atlas materials have excellent acid stability and permit the production of practically any cosmetic cream or lotion with pH matched to the skin.

For a description of the many possibilities offered by Atlas materials, write for your copy of the booklet, "A Guide to Cosmetic and Pharmaceutical Formulation with Atlas Products."

PHOTOGRAPH: MARK SHAW

fragrance is your business...a



Your exacting demands for fragrant
materials are a constant challenge to Givaudan.
These demands can be better met
at Givaudan because of an unparalleled position as

PRIMARY PRODUCER

As the world's largest manufacturer
of perfume chemicals, and as primary producer of almost
all important aromatic materials, Givaudan has
advanced methods of control over its products . . .
assures consistently high standards of
purity and olfactory quality . . . has an intimate
knowledge of the skillful
use of the materials it produces.

ss...and ours

"Yours For Quality
In All Things Fragrant"

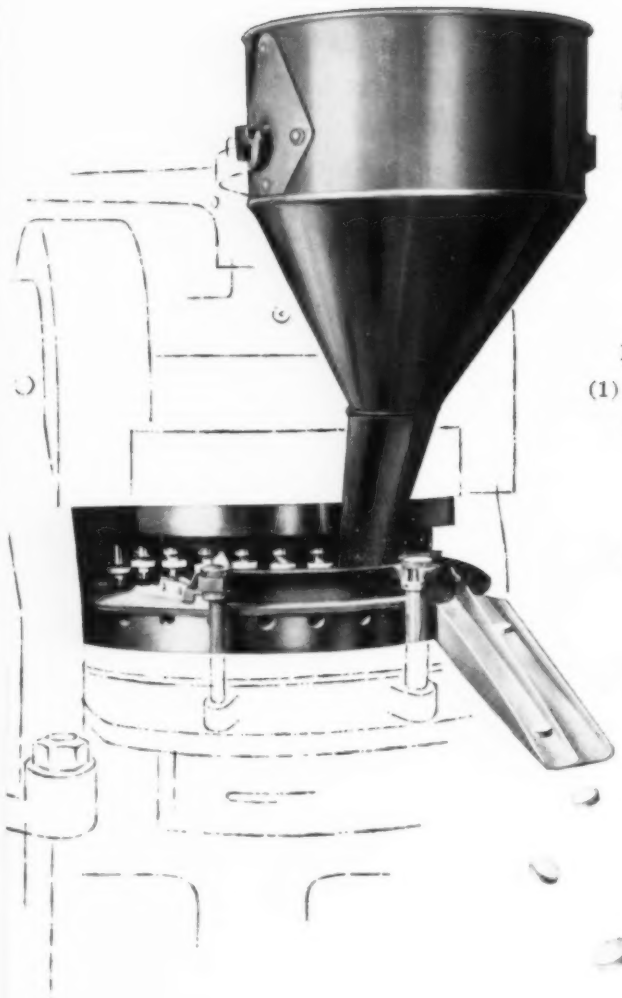
Givaudan-Delawanna, Inc.

330 West 42nd Street, New York 18, N. Y.

Branches: Philadelphia • Boston • Cincinnati • Chicago • Seattle • Los Angeles • Toronto

Mallinckrodt magnesium trisilicate

simplifies production problems



Pharmaceutical manufacturers, in using Mallinckrodt **Magnesium Trisilicate,** find these advantages: (1) controlled bulk assuring dependable density which results in less computation, (2) high acid adsorbent capacity, (3) uniform white color, (4) free-flowing qualities, (5) uniform particle size, (6) consistent smoothness.

Magnesium trisilicate is an ideal antacid because it is inexpensive, tasteless, non-astringent, neither constipating nor laxative in therapeutic doses, and does not produce alkalosis.

Why three forms? Mallinckrodt **Magnesium Trisilicate USP** is supplied in *powder* form designed for use in manufacture of capsules, powders, tablets and wafers; in *bulky* form for colloidal creams, powders and suspensions; and in *special bulky* form for suspensions, colloidal creams and powders.

whatever your chemical needs . . .

You can depend upon Mallinckrodt to supply quality chemicals *promptly* and in a *controlled physical form* to meet your specifications. This reputation has been earned over a period of 88 years of consistent *service* to pharmaceutical manufacturers. Call or write us about your chemical requirements.

PRIME PRODUCER OF CHEMICALS FOR THE PHARMACEUTICAL INDUSTRY

Mallinckrodt *Since 1867*

Mallinckrodt Chemical Works

Mallinckrodt Street, St. Louis 7, Mo. . . . 72 Gold Street, New York 8, N. Y.

Chicago • Cincinnati • Cleveland • Los Angeles • Philadelphia

San Francisco • Montreal • Toronto

Food and Drug Enforcement

The Manufacturing Chemist Association went on record last month as being in favor of mandatory pretesting of new food ingredients, but against the suggestion that the enforcement function of the Food and Drug Administration be changed from "policing" to "licensing." Speaking before the Food, Drug, and Cosmetic Law Section of the New York State Bar Association, William C. Foster, president of MCA, said: "the chemical industry does not believe that the Food and Drug Administration or any other administrative body should be required to give a final 'yes' or 'no' regarding the use of a food ingredient before it is put into use." This prior approval concept which Mr. Foster termed, "in effect licensing" would finally depend on the judgment of a single official who would assume responsibility for the safety of every new food product.

According to Mr. Foster, this might well lead to extreme conservatism, and as almost certain result, food research would be curtailed. Pointing out that chemicals are used widely in every phase of food production from fertilizers to man-made vitamins, Mr. Foster suggested specific amendments which, in the opinion of the chemical industry, would materially strengthen the Food, Drug, and Cosmetic Act.

These amendments, which put the MCA definitely on record as positively in favor of amendment of the law to give the FDA control over new ingredients in foods, are:

1. Add a new provision to the Federal Food, Drug and Cosmetic Act that no new ingredient intended for food use, nor food containing such new ingredient, should be shipped in interstate commerce or used in foods unless the shipper or user submits to the Food and Drug Administration, well in advance of the date proposed for use, his full data on safety.

2. Add a provision that the Administration have a reasonable time in which to review this data.

3. Amend the law to provide that it is a violation to ship such an ingredient or food containing it, which is unsafe in the manner used or intended to be used, or which has been inadequately tested for safety for such food use.

4. To resolve differences between the Food and Drug Administration and the supplier or user of the ingredient, add a proviso for informal conferences.

5. Where such initial differences cannot be resolved, provide that the FDA may have recourse to the Federal Courts.

Within the scope of these amendments, Mr. Foster said that the FDA would be able to prevent the sale of an unsafe or inadequately tested substance by the traditional procedure of injunction. "In actual practice," he said, "the FDA would very seldom need to resort to injunction proceedings to stop the sale of a new food substance." "Virtually no manufacturer," he added, "would risk the sale of a proposed ingredient knowing that the Food and Drug Administration has expressed substantial dissatisfaction with the test or

safety data. On the other hand, the right to a court determination would protect the supplier against arbitrary or overconservative decisions."

Representative Arthur M. Miller, Republican of the Fourth Congressional District of Nebraska, who was a member of the Select Committee on Chemicals in Foods and Cosmetics of the 82nd Congress headed by Representative Delaney, also addressed the meeting and expressed ideas on amendment of the Food, Drug and Cosmetic Act along similar lines.

Bradshaw Mintener, assistant secretary of Health, Education and Welfare, in a paper read for him due to illness, pleaded for increased funds and facilities for the Food and Drug Administration, saying:

"The Food, Drug, and Cosmetic Act is beyond any doubt the most important commercial law on our statute books. It regulates the largest volume of business of any single law of our land—at least $60 billion measured as retail sales. This is a conservative estimate of the volume of foods, drugs, and cosmetics which move in interstate commerce. No law has greater importance from the standpoint of the health and welfare of the people. The purity, safety and truthful labeling of foods, drugs and cosmetics is vital to every citizen. It follows that the adequate enforcement of this law is one of the most important responsibilities of the Federal Government. Any of these products—the foods we eat three times a day, the drugs we take when we are sick, the cosmetics which promote attractiveness—can deteriorate or be debased or contaminated in various ways which will be injurious to the purchaser or user. Just as our money can be counterfeited, so any of these products can be adulterated to serve the ends of deception or fraud."

Mr. Mintener pointed out that great changes, arising from many different causes, have increased the responsibility of the Food and Drug Administration. One of these causes is the increasing population of the country, as well as the shifting of population from farm and rural communities to urban centers. The increased population and the shift to urban centers means not only more consumers, but a much larger percentage that no longer grow their own foods. Furthermore, the gross farm output has grown 25 per cent since 1939, with an even larger proportion entering interstate commerce. A still larger gain has taken place in the perishable food items such as fruits and vegetables, eggs and poultry. This further increases the inspection load.

Further than this we have the large production and distribution of baby foods—something that was completely unknown in 1929. Further, we have the frozen food business, which during the last seven years has tripled in volume. In 1939, said Mr. Mintener, the average supermarket grocery store carried in stock about 1,000 items; today the same store carries over 5,000 items.

A similar evolution has occurred in drugs, said Mr. Mintener. The value of endocrines, such as hormones, ACTH, cortisone, has grown from some $10 million in 1939 to about $90 million in 1952. Antibiotics unknown in 1939 now total about $275 million. Antihistaminics, also unknown in 1939, now total about $25 million. Sales of barbiturates have more than tripled. Sales of sulfonamides have multiplied eight-fold. Vitamin sales have increased tremendously to about $160 million. Fifty per cent of the potent medicines available to doctors today were unknown fifteen years ago.

President Eisenhower's recommendation to Congress for the FDA for the 1956 fiscal year is $5,484,000 for the fiscal year starting next July 1. This would partially restore the loss in funds and personnel which has taken place over the last three years, said Mr. Mintener. It would provide for 60 chemists and inspectors for the field service and 12 new scientific and professional people in Washington.

With some slight ups and downs, said Mr. Mintener, the appropriations and manpower of FDA are practically the same as in 1940—15 years ago. Enforcement personnel today numbers only a handful more than it did when the present law, with its greatly added responsibilities, became fully effective. Since then, the population and the volume of regulated products have grown tremendously, a great number of new products have come on the market, and methods of processing and packaging have become increasingly complex.

During the war, FDA refrained from urging any increase in its appropriation. But beginning in the last year of the Truman Administration, the House Appropriations Committee has cut, each year, the amount recommended by the President for the FDA. These cuts now total more than $500,000, or about 10 per cent of the current budget of $5,100,000. Rising costs magnify the effect of this reduction, said Mr. Mintener.

The number of inspectors has declined from 249 to a low of 195, and now stands at 206. There are approximately 96,000 plants and warehouses in the United States which do a substantial business in foods, drugs, and cosmetics. During the past fiscal year, 9,962, or about 10 per cent of such establishments, were inspected.

The reductions in the FDA budget have had an immediate effect on the amount of work done to protect consumers, said Mr. Mintener. This is shown in part by the number of terminated court actions which in 1952 totaled 1,929, in 1953 total 1,782, and in 1954 totaled 1,333.

The enforcement policy of the FDA ranks violations of the Act in the following order: 1. Health violations; 2. Filth violations, including those which may not be dangerous to health but are offensive against common decency; and 3. Economic violations, particularly those which cannot be detected by the purchaser. The present level of appropriations places a limitation on efforts to protect the nation's health, a much greater limitation on efforts to prevent contamination of the nation's food and drug supply with filth, and eliminates most planned programs to seek out violations which cheat the consumer, except as violations are discovered in the course of other work. Pinpointing specific effects, FDA has had to drop such activities as the sampling of products for net weight, and the testing of foods to detect added water or cheapening ingredients. An increasing number of complaints is being received from the food industries, particularly, that the failure of FDA to enforce the food standards is encouraging injurious competitive practices, said Mr. Mintener. Obviously the budget increase recommended for the coming year is not going to make much difference in the basic situation, added Mr. Mintener, but if adopted, however, it will insure against a further decline from the existing level of operations.

The inadequacy of FDA inspection is actually a problem of long standing, according to Mr. Mintener. The wide scope of the law combined with limited resources for enforcement, create a complex problem of selection. Admitting that 100 per cent inspection would be impractical and its cost prohibitive, there is still the question—What level of inspection is necessary and desirable in the interest of all citizens? How much of an increase in staff is needed to reach that level? What programs need greater emphasis? What activities can be reduced or discontinued, or left to state and local authorities?

To aid in answering such questions, Secretary Hobby has appointed a committee of 14 distinguished citizens. The purpose of this committee, according to Mrs. Hobby, is to make recommendations as to the amount and kind of enforcement of the Federal Food, Drug, and Cosmetic Act and related statutes which will best serve the interests of the country (see page 163).

While the Federal Food, Drug, and Cosmetic Act is generally agreed to be an excellent statute which in most respects is thoroughly up to date, said Mr. Mintener, the facilities for administration of this dynamic law have not kept pace. This cannot continue, he added, the needs of the regulated industries are too great to be denied. Too great a risk is involved in continuing on the present basis. It would be unfortunate indeed, said Mr. Mintener, if the need for more adequate enforcement should be dramatized by some preventable accident such as took place prior to the passage of the 1938 law.

Research-minded companies regulated by the law know the need for improvement of scientific facilities and program of the FDA, said Mr. Mintener. The laboratories in Washington are now more than 20 years old, he said, and there is great need for a modern headquarters and laboratory building. In these days of rapid technological change, he added, it is essential that the scientific facilities and thinking of an organization like the Food and Drug Administration keep pace with the scientific work and thinking being done by industry. Furthermore, said Mr. Mintener, the separation of the Commissioners and the administrative divisions in one building, from the laboratory divisions housed in a different building is detrimental to the liaison which should exist between FDA's management and its scientific staff.

United States Commissioner of Foods and Drugs George P. Larrick, commenting on the increased FDA budget recommended to Congress by President Eisenhower, said:

"We must continue to direct our work against violations involving public health, including serious departures from sanitary standards, but this increase would permit a partial restoration of work on economic violations, particularly the enforcement of existing food standards and the completion of additional standards where there has already been extensive preliminary work. As you know our regulatory program on contaminated wheat was restored this month, after postponement pending a study by a 17-man grain sanitation committee appointed by the Secretaries of Agriculture and of Health, Education, and Welfare, and a review of their recommendations by the two Departments. We feel that restoration of this program is a definite step forward in our sanitation work.

"We are developing a training program for key food and drug personnel in the States, who in turn will conduct State-sponsored training courses to equip food

(Continued on page 261)

BLACK STAR PHOTO

monohydric alcohol esters in cosmetics

by Harry Hilfer

Esters of fatty acids of low molecular weight monohydric alcohols have been available for a long enough period of time, so that their use in cosmetics could have been rather thoroughly explored. They are interesting compounds because of their relatively low melting points as compared to the fatty acids themselves or even their glycerides or other polyhydric alcohol esters and therefore it becomes possible to use a liquid substance having the desirable properties of a natural limpid oil—without the drawback of eventual rancidity.

In the generally accepted theory of the mechanics of oxidative rancidity the focal point is the unsaturated linkage in the fatty acid which reacts with oxygen in the presence of catalysts starting a series of reactions which eventually lead to the odoriferous end products identified with a rancid odor. The more highly unsaturated the compound, the greater would be its susceptibility to rancidity. Some oils, such as castor oil, are normally resistant to tendencies toward rancidity, but if a strong peroxidant, such as an iron compound, were present even castor oil would turn rancid. The esters of monohydric alcohols made with saturated fatty acids exhibit no such tendencies since the focal point has been eliminated.

At room temperatures almost all of these substances—esters of ethyl, butyl and isopropyl alcohol, and stearic, palmitic or myristic acid are low viscosity liquids and may therefore be used wherever indicated. Their viscosity is so low that after application they do not exhibit the characteristic greasy appearance or feel often associated with mineral oil. Because of their resistance to rancidity they may also be used in conjunction with iron oxide pigments. There are therefore a number of applications in which compounds of this type could be used to advantage.

A few years ago there were several different types of make-up bases which appeared both in liquid and in cake form—where esters of the type described were used. Some of the liquids, particularly, contained powders and pigments in suspension in a liquid which was principally isopropyl myristate. It was applied by the finger tips and since the viscosity of the oil was so low it did not exhibit the greasy characteristics one would expect from such a preparation, and in spite of the large amount of iron oxide pigment present, it did not exhibit any tendency towards rancidification. The cake preparation was similarly formulated except for the inclusion of waxes so that it could be poured at an elevated temperature and then allowed to set. Indeed the use of these esters has now been included in some of the emulsion types of make-up lotions, where they are used primarily as promoters of greater adherency to the skin of the powders and pigments used in the preparations.

The fact that these esters are resistant to oxidative rancidity combined with their now greasy characteristic allows their use in an entire range of make-up items. Many of the newer pressed cake powders on the market have incorporated them in the formulas to detract from the "dry" feel of the powder not so treated. They may also be used in eye shadows, where colorants are limited to natural pigments and inorganic compounds—usually compounds of iron. In this connection however they have one noticeable flaw which must be considered when they are used. In an eye shadow for example, hSere waxes are used to stiffen the vehicle—a system is formed which depends on a thixotropic effect to make an ideal vehicle capable of liquefying at the point where pressure is applied. This thixotropic effect is due to a complex physical structure which can best be compared to a bees comb where the waxes form the walls of cells holding the softer honey. The thin walled cells in preparations into which the thixotropic effect has been introduced may be broken by pressure allowing the liquid portion to flow. The strength of the walls of course can be varied to suit the formulation by the introduction of more or less of the proper waxes. This system will retain its stability as long as the oil con-

(Continued on page 262)

Wider Drug Distribution

FREDERIC LEWIS PHOTO

The situation surrounding the distribution of medicinals appears to be facing a definite change. With the sharp increase in the prescription business, due not only to the much larger number of drugs with which diseases are treated today restricted to prescription, but also to the relatively high prices at which these drugs are sold, the retail pharmacist is in a much firmer position than he was before start of the present era in therapeutics. By and large today, practically everyone who is treated for any disease by a doctor today will wind up in the drug store with a prescription to be filled. And an extremely high percentage of these prescriptions are for drugs which cannot be obtained without a prescription. This brings a sharply increased number of people to the drug store, and it also sharply increases the dollar volume of the prescription department of the drug store both because of the increased number of prescriptions and the higher average price charged for a prescription.

Because prescriptions bring people to the drug store, they tend to increase the general business done by the drug store. Anything that will increase store traffic will help sales, and prescriptions increase the store traffic of a drug store. For this reason, sales of non-prescription drugs, of cosmetics, and of all other items in a drug store benefit from the increased prescription business which the retail pharmacist is enjoying today. This is rather the reverse of trying to attract people to a drug store by means of a soda and lunch business, or by means of newspapers, magazines, or other non-related items. However this is the thing that has placed the retail drug store on a much firmer foundation.

But while the retail druggist reaps this benefit of modern therapy, he faces keen-edged competition in another direction. This is the movement to release the sale of practically all drug preparations not restricted to prescriptions, from the restriction that they mainly be sold in drug stores. This movement has resulted because of several changes in conditions in this country, the first of which was the enactment of the Durham-Humphrey amendment to the Food, Drug, and Cosmetic Act.

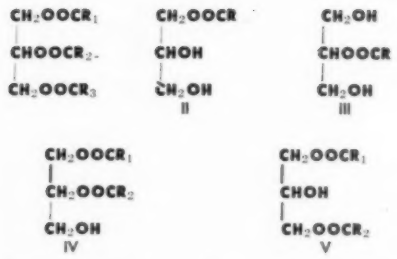
The result of that amendment was definitely to place practically all drug products into two classifications—those restricted to prescriptions, and those which can be sold without prescriptions, or over-the-counter. The establishment of these two classes of drugs by law, and the placing of all drug products on the market into the two classifications by administrative action, definitely establishes what drug products can legally be sold and used for self-medication. And since these drugs are administratively believed to be harmless in the hands of the average individual, many are of the opinion that it is not necessary that the sale of them be restricted to drug stores. Certainly, these people contend, it is not necessary that these drug preparations be sold under the direct supervision of a pharmacist.

Another important factor in the changing conditions in this country tending to strike at the restriction of practically all drug preparations to drug stores, is the changing distribution picture which in turn is the result of many factors, some of which are high prices, increases in population, and population shifts. The supermarket —which in many instances is becoming a modern general store—is a dominant factor in today's distribution picture. And today it is common practice for manufacturers of cosmetics and toilet preparations to

(Continued on page 263)

Acetylated

COURTESY TUSSY COSMETIQUES



Natural fats and oils, long used in cosmetic preparations, have a complex composition. They consist of mixtures of triglycerides (structure I) which are esters of glycerol and various saturated and unsaturated long-chain fatty acids. Their characteristics and physical properties are largely dependent on the types, proportions, and distribution of the fatty acids within the glyceride molecules.

Monoglycerides have also been used extensively in cosmetics. The technical grades are complex mixtures consisting of the isomeric monoglycerides (structures II and III) of different fatty acids and about an equal amount of diglycerides (structures IV and V). Different lots of technical grades may vary in properties. Molecular distillation has resulted in purified monoglycerides of uniform physical characteristics which contain about 90 per cent of the 1-isomer (II), 5-8 per cent of the 2-isomer (III), and negligible amounts of diglycerides.

The acetylated monoglycerides are a new class of fatty compounds that should find diversified use in cosmetics. They are characterized by the substitution of acetyl groups for part of the fatty acid groups normally present in natural fats (VI-IX). Their properties are dependent on the type of monoglyceride used in their preparation and on the degree of acetylation. For example, consider two distilled acetylated monoglycerides corresponding to the distilled monoglycerides from lard and from hydrogenated lard.† Table I gives the melting points of these acetylated monoglycerides and their parent compounds.** The data show that the melting points decrease with increased unsaturation and increased acetylation. Products with intermediate melting points may be obtained by varying the degree of acetylation. Different physical properties may be obtained by acetylating other monoglycerides. Thus, it should be possible to prepare products with tailor-made properties.

TABLE I

Melting Points of Monoglycerides and Acetylated Products

Number	Product	Unsaturation (Per Cent)‡	Acetylation (Per Cent)	M.P. (°C)
1	Monoglyceride from lard	50-60	0	50-55
2	AML	50-60	95-100	—5-+5
3	Monoglyceride from hydrogenated lard	0	0	68-70
4	AMHL	0	50-55	42-44

The properties of these two acetylated monoglycerides are listed in Table II.

*Reprinted from proceedings of the Scientific Section of the Toilet Goods Association, No. 22, December, 1954.

†To distinguish the two, the acetylated monoglyceride from lard will be called AML; that from hydrogenated lard, AMHL.

**These are commercial products as obtained from Distillation Products Industries, Division of Eastman Kodak Company:
1. MYVEROL Type 18-40 Distilled monoglycerides.
2. MYVACET Type 940 Distilled acetylated monoglycerides.
3. MYVEROL Type 18-00 Distilled monoglycerides.
4. MYVACET Type 500 Distilled acetylated monoglycerides.

‡Percent unsaturated acids of the fatty acid portion.

monoglycerides in cosmetics*

by Everett G. McDonough
and Walter W. Edman
EVANS RESEARCH AND DEVELOPMENT CORPORATION, NEW YORK

TABLE II
Properties of Acetylated Monoglycerides

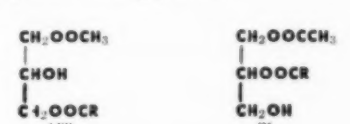
	AML	AMHL
Hydroxyl value	22	141
Peroxide value (P.V.)	2	2
Oxidative stability	P.V.28 after 103 hrs. aeration at 100° C	P.V.2 after 800 hrs. aeration at 100° C
Melting point (°C)	—5- + 5	42-44
Color	water white	white
Refractive index	1.4478 at 40° C	1.4486 at 40° C (calc)
Viscosity	50 centipoises at 20 °C 19 centipoises at 50° C	30 centipoises 50 °C
Specific gravity	0.99 at 20° C 0.96 at 50° C	1.00 at 20° C 0.94 at 50° C
Solubility	complete in 80% aqueous ethanol, castor oil, and common organic solvents	major portion soluble in common organic solvents, but some crystals form even at low concentration

AML is the liquid distilled product corresponding to distilled monoglycerides derived from lard in which essentially all of the free hydroxyl groups have been acetylated. The fatty acid composition of lard is about 50 per cent oleic (unsaturated fatty acid), 30 per cent palmitic, and 10 per cent stearic, and 10 per cent of other natural acids. The acetylated product should consist of about 65 per cent 1,2-diacetylated monoglyceride (VI) and 35 per cent 1,3-diacetylated monoglyceride (VII).[1]

VI VIIC

AML has a peroxide value of 28 after 103-hours aeration at 100° C. This indicates a good resistance to oxidative rancidity which is unusual for a liquid fat product. It is more polar than natural glyceride oils. This should make it more readily miscible with aqueous systems. For example, it is miscible with alcohol or with alcohol-water mixtures containing as much as 20 per cent water.

AMHL is the distilled product corresponding to the distilled monoglycerides from hydrogenated lard in which about 50 per cent of the free hydroxyl groups have been acetylated. The fatty acid composition of hydrogenated lard is usually about 70 per cent stearic, 30 per cent palmitic, with not more than 2 per cent oleic. AMHL is a monoacetylated monoglyceride such as VIII and IX. It also contains some monoglyceride and some diacetylated monoglyceride.



VIII IX

AMHL is a soft, waxy material which is remarkably flexible in thin films. It is nongreasy and extremely resistant to oxidative rancidity.

(Continued on page 252)

Lather shaving creams

CONDENSED FROM A FORTHCOMING BOOK

by Wm. R. Keithler

The lather shaving creams have met a sizable amount of competition in the forms of brushless creams and electric razors. However, there are still a great many adherents of the lather types. Men, in general, look upon shaving as a necessary evil, but are nonetheless very insistent upon good quality in the shaving aids they employ. It is also significant that most men invariably stick to one brand. This does not mean that a new product hasn't a chance of selling. On the contrary, most men are willing to try a new product if it offers greater speed, more economy, or smoother shaving.

The functions of a good lather shave cream are quite similar to those of the brushless type. The cream must be of the proper consistency, to extrude from the tube easily, but with the proper amount of pressure. It must lather into an abundant foam, very quickly. The lather itself, must be stable; that is, last throughout the entire shaving operation. One shave should not require the use of too much cream, and finally, the cream should not excessively dry the skin, but leave it soothed and refreshed.

In looking over these desired functions and characteristics, it is easy to see that the formulation and manufacture of a lather shave cream is just as difficult, if not more so, as brushless shave creams. These standards can be modified by the addition of certain "active" ingredients. For example, menthol is sometimes added, for the cooling sensation it imparts to the skin. Hexachlorophene and other antiseptics are also added for their germicidal activity, and astringents, such as zinc sulphocarbolate, are added to give a certain refreshing feel after the shave. These are all special properties, and cannot be considered as general properties. They are, however, very desirable in most creams, and many users appreciate their addition to a product.

Numerous difficulties are encountered in the manufacture of lather shaving creams not found in many other products. The majority of these creams are packaged in collapsible tubes, which operation is very technical. Several problems arise after the cream has been packaged, if careful manufacturing is not stressed. Separation, curding, air pockets, hardening, and corrosion all yield an unsatisfactory product. However, most of these problems can be eliminated if the manufacturer spends a small amount of time and money in research and control. To conteract these difficulties a complete program of quality control, of both the new products, and the older products should be undertaken upon each and every batch of shaving cream.

The raw materials used in the manufacture of lather shave creams do not vary to any great extent from one brand to another. All depend, for their effectiveness, upon soap. This soap is a necessary part of lather products, as it emulsifies the sebum that covers each individual hair, thus enabling a more intensive wetting of the hairshaft. This, of course, is a necessary part of the shaving operation. According to Lesser,[1] the desirable properties of a shaving soap are: (a) voluminous lathering qualities, (b) resistance to rapid drying on the skin, (c) freedom from skin irritation, and (d) rapid softening of the hair by the water in the lather. It will be seen that these properties are essentially the same as those desired in the finished product, so that the functions of the finished cream are highly dependent upon the soap included in the formulation.

The type of oil and alkali present in the formulation have a distinct bearing upon the properties enumerated above. The last property, that of wetting the beard, is not directly connected to the type of soap. In many of the newer shaving creams, synthetic wetting agents have been added to assist in this respect.

Coconut fatty acids and stearic acid are the chief ingredients in lather shaving creams, but palm, tallow, and olive oils are sometimes used to augment the properties of the former soaps. The most common alkalies

used in the saponification of these acids are sodium and potassium hydroxides. Sometimes, either one or the other alkali is used alone. However, it is more common to find a mixture of the two. The most common ratio seems to be about four or five parts of the potassium hydroxide to one part of sodium hydroxide. Variations, of course, will cause noticeable differences in both lathering qualities, and consistency. When specific results, such as a soft cream, are desired, special alkalies, such as triethanolamine are used.

Glycerin is a very popular ingredient in lathers having creams. It has a markedly favorable influence upon the consistency of the finished cream, and at the same time, improves the softness and smoothness of the cream. Its humectant properties need no mention, since these properties have been described numerous times. However, for their purely humectant properties, the polyols may be used. These compounds do not, however, have the favorable effects upon the product that glycerin exhibits. Although sorbitol is not recommended for incorporation into brushless shaving creams, its use in lather creams has certain definite advantages. Sorbitol is an excellent hygroscopic agent, and at the same time, is also something of a beard softener. The author has conducted extensive research along this line, and has found that sorbitol has definite hair softening properties. This function cannot be matched by glycerin.

The various oils and acids used in the formulation of these products are included in a formula for a specific reason. Each ingredient has a definite function. Coconut oil, and coconut fatty acids, which are the most common ingredients, other than stearic acid, are used because they will produce a copious lather. However, coconut oil soap exerts a sharpness, or irritation, in the finished product. For this reason, it is necessary to add some ingredient designed to counteract this irritation. Several oils are used in this capacity, the best and consequently the most common being olive oil. Olive oil produces a very mild, soothing soap which goes a long way towards reducing the irritating qualities of coconut oil soap. Palm oil is also used to counteract this irritation. It too, produces a mild soap, upon saponification. Cottonseed, and soya oils are used to a somewhat lesser extent in lather shaving creams. They do, however, find some use in shaving soaps and bowls.

Irritants are being used to a rather wide extent in the newer formulations. Menthol, in particular, is a very important additive in many of these products. According to several authorities, menthol in shaving creams masks the irritation caused either by the act of shaving, or some of the less mild shaving creams. Menthol possesses a certain amount of astringent, anesthetic, and antiseptic properties in itself, so that, its incorporation lessens the objectionable irritation caused by shaving. Besides this property, it will leave the skin refreshed and cool after the shave.

Emollients have a very definite place in lather shaving cream. Cetyl alcohol is a frequent constituent of these products as it aids in the emulsification of the product; assists in the stability of the cream; and produces a velvety feel on the skin, due to its emollient action. Lanolin can be used, in small amounts, to add emolliency to the cream. In excessive quantities, however, lanolin adversely affects the lathering qualities of the cream. Lecethin is an excellent emollient in these products. A combination of lecethin and cetyl alcohol will produce a very desirable skin softening action. In very rare instances, some of the other common emollients, such as stearyl alcohol, and alkyl esters of the higher fatty acids are used. However, these materials can be quite readily replaced by the less expensive cetyl alcohol, lanolin, and lecethin. Glyceryl monostearate is an excellent ingredient in lather shaving

(Continued on page 254)

A New Mercaptan-Disulfide Mechanism*

by Ross Whitman and Milton G. Eckstrom

RAYETTE, INC., ST. PAUL, MINN.

I am going to present to you an amended picture of the chemical system involved in the permanent waving of hair with reducing agents and subsequent oxidizing agents. I am going to offer some arithmetical equations describing this new system, and I am going to describe some laboratory experiments to show how this system can be used for the evaluation of any permanent waving process.

Unfortunately, and I say this with genuine regret, both the mathematical treatment and the laboratory experiments could easily have been made more rewarding to you. While the authors cannot escape most of the blame for these deficiencies, I respectfully suggest that some part of it properly accrues to you. You see, in the preparation of a paper on this particular subject in this particular era one must truly operate "in a vacuum." We do not know whether those concepts which we regard as elementary and obvious are accepted by other workers in our field, nor do we know what concepts and ideas that are taken as common knowledge in other laboratories remain to be discovered in our own.

In this paper we have, as a matter of policy, eliminated all material which we recognize as controversial (with one outstanding, outrageous exception) and complying with the demands of our lawyers and our management, we have eliminated certain other data as well. Even after this extensive censorship, however, I am afraid that many of our unrecognized prejudices will slip through. But I think you should be willing to tolerate these, in return for our solemn promise to tolerate your own if you will just, please, tell us what they are. If a querulous note crept into my voice when I said that, I am sure that everyone knows why.

Up until fairly recently, the reaction of mercaptans on the cystine bond in keratin has been written:

$$\mathrm{WSSW} + 2\,\mathrm{RSH} \underset{|\mathrm{O}|}{\rightleftharpoons} 2\,\mathrm{WSH} + \mathrm{RSSR}$$

Slide 1

The work of Bersin and Steudel[1] describing the system

$$\text{cystine} + 2\ \text{thioglycolic acid} \rightleftharpoons 2\ \text{cysteine} + \text{dithiodiglycolic acid}$$

is of particular interest because they found that this reaction comes to equilibrium from both sides at 50 per cent transformation, with finite velocity, is more rapid toward the right, obeys the mass action law, and the rate is determined by the degree of dissociation of the mercaptans into RS− and H+. All of these observations are particularly pertinent to the arithmetical sections of our paper.

In recent years several papers[2-3-4] have appeared which propose that the reaction goes in two steps:

1)

$$\mathrm{WSSW} + \mathrm{RSH} \rightleftharpoons \mathrm{WSH} + \mathrm{WSSR}$$

2)

$$\mathrm{WSSR} + \mathrm{RSH} \rightleftharpoons \mathrm{WSH} + \mathrm{RSSR}$$

Slide 2

*Reprinted from proceedings of the Scientific Section of the Toilet Goods Association, No. 22, December, 1954.

Aside from the validity of the proofs offered in the references cited, the fact that the bimolecular reaction of keratin cystine with sulfites is unquestionably

$$WSSR + SO_3 = \rightleftarrows WSSO_3^- + WS^-$$

supports this mechanism.

In our laboratories, we have come to write the basic reaction, without showing the mobile mercaptan or disulfide constituents, like this:

$$WSSW \rightleftarrows WSH_I + WSSR_I$$

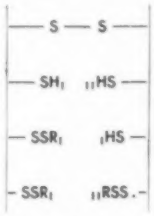
$$\downarrow\uparrow \qquad \downarrow\uparrow$$

$$WSSR_{II} \qquad WSH_{II}$$

Slide 3

We are moving now into a kind of chemistry which we find singularly intriguing. The various components shown in this three-way equilibrium are *different* from the components of conventional equations, in that the "W's" which signify the polypeptide chains in the hair, are immobile, fixed. It is because of this that it is necessary to show WSH in equilibrium with the WSSR *twice*. This equation describes, in other words, not only the components of the system, but it indicates their geography: "WSH_I" can exist opposite "$WSSR_I$," or it can exist opposite "WSH_{II}," but it can never exist opposite "$WSSR_{II}$," nor can "$WSSR_I$" be opposite "WSH_{II}."

The next slide depicts these various positions:



Slide 4

In the diagram where the disulfide terminal group (SSR) appears opposite the terminal cysteine group (SH) the subscripts could both be "II's," but if one subscript is a "II" the other one *has* to be.

Now, before we get into that arithmetic I promised you, we need to review briefly the analytical techniques which we use.

I. Cystine

We have developed a modified phosphotungstic acid method for determining the cystine content of hair, regardless of its state of reduction. I am not going to go into detail as to our procedure here; we would be happy to send the complete instructions to anyone who cares to write for them. I might say that we do *not* use the Sullivan method. In our procedure the protein is hydrolyzed only enough to solubilize it. The phosphotungstic acid color complex forms readily with all RSSR compounds in the hydrolysate, so that complete hydrolysis to cystine amino acid is not necessary as it is in the Sullivan method. Such extensive hydrolysis is objectionable because of the instability of cystine in the hot acid hydrolysis medium, giving falsely low analytical values for the cystine content.

II. Cysteine

We use for cysteine (or "SH") determinations a procedure especially developed for insoluble proteins in which the cysteine content is measured colorimetrically with 2,3-dichloro 1,4-napththoquinone. Again, I don't want to burden this paper with procedural details. We would be happy to send complete directions for carrying out cysteine analyses by our method to anyone who cares to write us for them. But it will be important in a few minutes for you to appreciate the fact that in our cysteine analysis we form either a mono-hemimercaptol or a dihemimercaptol, depending upon the spacial arrangement. This is shown on slide 5, page 266.

This means that an NQ-cysteine determination will be distorted on the high side if any mixed disulfide groups occur opposite cysteine groups.

III. Load-Elongation Index

A brief description of the hysteresis index and its significance has been published.[5] In our work on human hair we use a 20 per cent index. *(Continued on page 265)*

COURTESY ELIZABETH ARDEN

Evaluation of dermal

by Thomas W. Tusing, M.D.

HAZLETON LABORATORIES, FALLS CHURCH, VIRGINIA.

In recent years this group has heard much about skin testing of new cosmetic products to evaluate the safety or hazard potential prior to marketing. If we define the term "hazard" as the probability to produce injury, and the term "safety" the probability to produce no injury, then the competent cosmetic manufacturer should strive to maintain a wide safety margin in new product development, somewhere between these limits. In the above definition, "injury" as related to skin tests of cosmetic or toilet goods is meant to indicate skin reactions either on the basis of irritation or sensitization. Among other criteria of injury, which should be evaluated for all materials used in cosmetics but which are not to be discussed, are: systemic absorption from dermal application, as in the case of cosmetic products; eye irritation, particularly in the case of shampoos; and oral toxicity, in case of accidental ingestion by infants. These are but several examples. Advance or progress in the cosmetic industry depends upon discovery and utilization of new materials, and these must be evaluated by adequate premarketing studies. Any adequate study for the evaluation of new products must be practical and reasonably economic; otherwise, progress in the cosmetic field will not be encouraged. Confining ourselves to skin manifestations capable of being elicited by new products, this presentation is intended to review some of the attributes of conventional techniques used in the evaluation of dermal sensitization from both the practical and the theoretical standpoint.

Most of the audience is familiar with the various methods currently used for evaluating the dermal sensitizing potential of a new chemical formula. Perhaps fewer are familiar with the history or chronological development of these methods, and still fewer are sufficiently trained and experienced in the biological sciences to interpret and evaluate them. Any evaluation of new products in regard to skin sensitization potential must make the transition from theoretical to practical. Failure to clearly differentiate between these two is largely responsible for the advocacy of various methods as being "best". It is probable that no one method can ever be best for all situations; yet, until more precise methods become available, the present ones must be made to serve.

A brief review of the development and objectives of evaluation techniques will serve as a basis for further consideration of their utility, applicability, and reliability. It would be folly to attribute the discovery of irritation, allergy, or dermal sensitization to our current period. Yet this is not the time to discuss names and dates of historical interest. What is important is that, we as biological and medical scientists more or less adequately classify certain dermal phenomena as (1) primary irritation or (2) contact allergy, or sensitization. For our present purposes these may be defined or described as follows:

Primary cutaneous irritation is an immediate skin lesion caused by materials acting directly on normal skin.

Cutaneous sensitization is a delayed skin response produced by materials on contact subsequent to an initial sensitizing exposure. The initial contact induces certain cutaneous changes which, after an elapse of five to seven days or more, sensitize the skin and, on recontact with the inciting agent, are followed by skin lesions.

The methods for evaluating new dermal products for their irritation and sensitization potential require the use of both animal and human subjects.

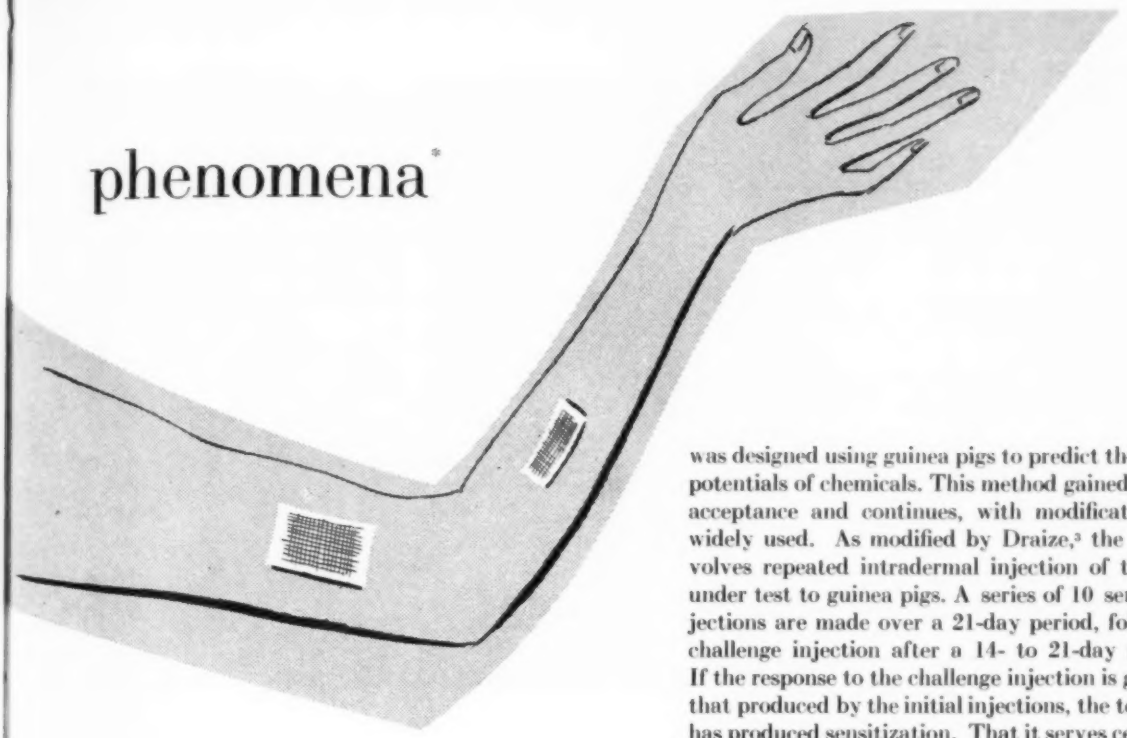
The evaluation of dermal irritation, its mechanisms and methodology, has frequently been discussed.[1-2-3] Animal studies are used most effectively in this evaluation. Its most important aspect at present is that, in the hands of skilled scientists, irritation potential or potency may serve as a valuable guide to new product development, and as a governor on uncontrolled marketing. In dermal irritation tests, graded doses of the test materials, diluted or undiluted, are applied to shaved skin areas of animals, usually rabbits, and the response elicited is recorded after a specified period of dermal contact. Substances which produce slight or no response on single contact are repeated daily for 5 to 10 applications to determine if the slight irritative responses build up, that is, if a summation of responses occurs. Materials found to be nonirritating or mildly irritating to rabbits' skin usually may be expected to produce no greater irritant response on contact with human skin.

Cutaneous Sensitization

Cutaneous sensitization, per se, by any means so far devised, defies adequate predetermination in a new

*Reprinted from proceedings of the Scientific Section of the Toilet Goods Association, No. 22, December, 1954.

phenomena*



chemical or formula. Since pre-exposure to a new chemical is nonexistant, there would be no theoretical basis for a sensitization reaction to occur until after the chemical had been used. Animals certainly would not serve a useful purpose for prediction. We should not overlook the possibility that some of these reactions may have genetic characteristics, as in the atopic allergic conditions found in infants. Cutaneous sensitization from initial exposure, then, will probably remain for the most part in the sphere of product experience rather than product development and evaluation, although it is never safe to assume that a new material has no sensitization potential. The following discussion shows how the prediction problem is approached.

Cutaneous sensitization as it relates to the development of new cosmetic materials is usually thought of as being a dermal reaction produced by repeated exposure, assuming that primary irritation has been eliminated by the various procedures available. This phenomenon is classified by the dermatologist as dermatitis venenata, or contact dermatitis. In the terms of the consumer, it is thought of by some as an allergy and by others as a reaction due to hypersensitivity, or oversensitivity. This phenomenon, then, is the problem of the chemical manufacturer, the pharmaceutical company, the food processor, the agricultural chemical company, and the industrial users of chemicals, as well as the cosmetic manufacturer.

From these various sources, probably more than from the cosmetic industry, came the early developments in the evaluation of contact dermatitis or skin sensitization. Landsteiner et.al.[4-5] with their studies on chemical compounds and poison ivy extract, probably laid the foundation. On this foundation a procedure was designed using guinea pigs to predict the sensitizing potentials of chemicals. This method gained world-wide acceptance and continues, with modifications, to be widely used. As modified by Draize,[3] the method involves repeated intradermal injection of the material under test to guinea pigs. A series of 10 sensitizing injections are made over a 21-day period, followed by a challenge injection after a 14- to 21-day rest period. If the response to the challenge injection is greater than that produced by the initial injections, the test material has produced sensitization. That it serves certain useful functions, particularly in research, has never been questioned. Landsteiner probably never anticipated that the method would be adequate for predicting human response to a delicately balanced formulation such as a cosmetic. Nevertheless, "guinea pig sensitization tests," based on Landsteiner's, have been widely used during the last decade or two. Not all investigators accepted the method blindly, and soon various notable examples of inadequacy and inappropriateness were conspicuous. Gradually dissatisfaction became so widespread that many observers declared the method valueless. Others, fortunately, took the considered view that, in its place, and for legitimate objectives, the guinea pig test was useful as a research and screening tool. Given understanding interpretation and an appreciation of its limitations, it continues to serve this purpose.

Patch Tests

From the time the skin patch test was first introduced by Jadassohn[6] in 1895, diagnostic patch testing has been widely used in eliciting the causes of contact dermatitis. This procedure serves admirably as a detextive procedure; it does, however, record only the past, not predict the future. As a clinical procedure, it is adequate, but as a product development measure it has little, if any, value except in cases of alleged damage. The magnificent pioneering work of Louis Schwartz and his associates,[7] in studying contact dermatitis from a public health standpoint, was a major development. From this work the so-called prophetic patch test technique came into being. Here, for the first time, as the name suggests, was a method, in hu-

(Continued on page 248)

COURTESY S. B. PENICK & CO.

Aspects of Several ANTIBIOTICS*

by Wm. Burdell Baker

DIRECTOR OF FIELD SALES, ANTIBIOTIC DIVISION, S. B. PENICK & CO., NEW YORK

part four

Neomycin (*concluded*)

Tyrothricin

Gramicidin

Candicidin

BIBLIOGRAPHY

Resistance: Very few organisms appear to become resistant to neomycin, which is in contrast to certain other antibiotics.[105,120,133] One explanation given is that since neomycin is bactericidal as well as bacteriostatic, usually organisms do not remain to become resistant.[133]

There are several reports that do make reference to the development of resistance by a few organisms. For instance, although neomycin is said to be efficacious against Pseudomonas and Proteus, in cutaneous pyogenic infections, resistance is said to have been demonstrated in certain species of these organisms.[32] Also, certain strains of hemolytic streptococci have been noted to be resistant, and the occasional occurrence of secondary activation of *Candida albicans* (monilia) and Aspergillum organisms is reported.[14]

One worker combined erythromycin with neomycin, evidently to overcome even the exceptional instance of resistance to certain strains of hemolytic streptococci; because he felt that erythromycin was effective against hemolytic streptococci.[144]

As mentioned before, there is very little opportunity for overgrowth of fungi, yeasts, and other resistant organisms, when neomycin is used preoperatively in bowel surgery; because the drug is employed for only 24 hours before such surgery. When neomycin is used over a long period of time, such as may be necessary in the treatment of certain skin infections, several investigators have reported, or make mention of, a small percentage of cases of cutaneous moniliasis at the site of application.[34,36,136,123,14,107]

One of the dermatologists noted only one case of localized moniliasis in 125 cases, an incidence of 0.8 per cent.[123,107]

One of the other groups[26] noted localized cutaneous moniliasis in seven patients out of 264 (2.6 per cent) after prolonged local application. They stated that experiments conducted do not indicate that neomycin enhances the growth of fungi, nevertheless that the drug should be omitted for local use if a cutaneous moniliasis is suspected. Incidentally, in the seven cases noted, the condition cleared up promptly following the cessation of locally applied neomycin and the use of such agents as Castellani's paint, gentian violet, or Vioform ointment (three per cent).

One report suggested that a moniliastic agent be incorporated in the neomycin formula, and in this case methylparaben and butyl parahydroxybenzoate was employed in a lotion formula. He then conservatively questioned whether or not these agents were responsible for the low incidence in his series; because of other factors, such as location of the lesions.[107] In pyodermas, for instance, it is said that the usual sites are not those areas where monilial infections are especially likely to occur.[33]

Another report also employed, in a combination neomycin-erythromycin ointment, the parabens and N-butylparahydroxybenzoate.[144] No cases of monilia were observed in 88 patients treated.

It may be that such reports of bacterial strains resistant to neomycin, even though noted only occasionally, will stimulate researches in directions that would eliminate the occurrence of bacterial resistance. Perhaps one method of accomplishing this will be by the use of proper combinations of antibiotics, or the combination of antibiotics with certain chemicals.

As for moniliasis, we have just noted that this is not a serious accompaniment of neomycin usage; that monilia gets no opportunity to overgrow when the antibiotic is used for preoperative intestinal surgery, and the incidence is very low when used dermatologically.

However, monilia overgrowth is fairly important in its occurrence with the use of other popular and widely used broad spectrum antibiotics, and the subject is covered in more detail further on in this report.

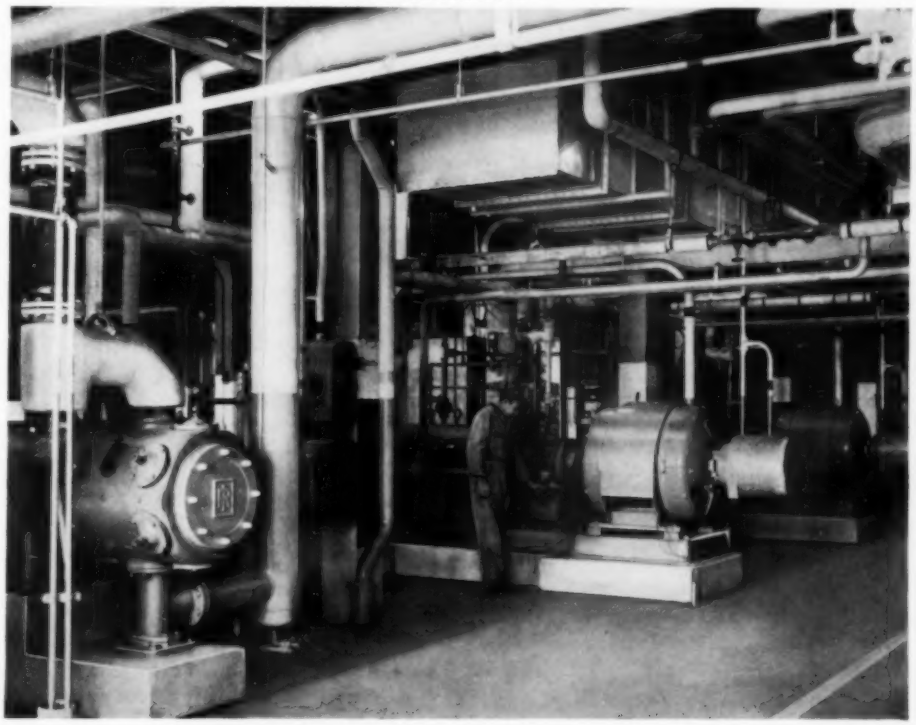
Amebic Dysentery: Neomycin employed orally has also been studied by several groups of investigators in animal and human amebiasis, because of its described alteration of the bacterial flora of the intestinal tract.[151,42,129,135,145]

Apparently it has not yet been established whether the mode of action of neomycin in human amebiasis is due primarily to a direct effect on *Endamoeba histolytica*, whether it exerts indirect amebacidal action by altering the intestinal bacterial flora, or whether it is a combination of both of these mechanisms.[145]

However, it must be said that the status of neomycin in the treatment of human amebiasis is not completely resolved, primarily because of the need for more abundant evaluation than exists at the present time; but at least the antibiotic could be considered as an adjunctive with other amebacidal agents.[57]

Combinations and Synergism: Neomycin has been found to be synergistic with such antibiotics as baci-

COURTESY S. B. PENICK & CO.



tracin, penicillin, and streptomycin; and these antibiotics have not usually been shown to be antagonistic to each other;[152] although one report does mention antagonism between neomycin and bacitracin, when the two substances were administered for intestinal antisepsis, in dog studies.[76]

The mixture of neomycin and gramicidin is said to be potentiated in a truly synergistic manner,[153,154] although in one reported instance the investigators were not able to demonstrate this.[155]

A strong synergism appears to exist between neomycin and polymixin B. It was noted that *Pseudomonas aeruginosa*, which is often antibiotic resistant, was ten times more susceptible to this combination than to these antibiotics singly. *Micrococcus pyogenes* (var. *aureus*) was said to be 280 times more susceptible to the combination than to neomycin alone.[155]

In other *in vitro* studies conducted, the results indicated that a combination of neomycin and penicillin increases the breadth of the susceptible spectrum to include both Gram-positive and Gram-negative organisms. A variety of species was tested and synergism was observed with a combination of neomycin and penicillin against one strain of *Micrococcus pyogenes* (var. *aureus*). Results of the combination for the other species indicated that the activity followed the most active members of the pair.[156]

Synergism has been noted between neomycin and streptomycin, in *Salmonella pullorum* infections in chick embryos.[157]

Probably the majority of investigations into synergism have been concerned with antibiotics not specifically limited to topical use.[80,158,159,152] Accordingly, one of the group of workers mentioned above decided to make it a point to limit their studies to a combination of antibiotics limited especially to topical use, and reported their findings with combinations of neomycin, polymixin, and gramicidin, as well as the three-way combination itself; for that specific application.

The three-way combination was found to be as effective as its most effective single or combined components, with one exception. That is, there was an antagonistic effect observed with one of the three strains of *Micrococcus pyogenes* tested, which suggested interference by polymixin B with the combined effect of neomycin-gramicidin.[154]

Without mentioning synergism, one dermatologist combined neomycin and erythromycin, containing 4 mg. per gram of each in ointment form, and obtained excellent results in the treatment of pyodermas.[144]

It is quite likely that synergistic effects between neomycin and other antibiotics may exist, depending on the organisms and species of organisms studied, as well as other factors.

In this connection, for instance, the combination of neomycin and tyrothricin might be found to be synergistic. At any rate, considering the properties of each, the combination is similar in logic to a neomycin-gramicidin combination, with a possible advantage of somewhat better economy; and may well be indicated in specifically chosen instances, either for human or animal use.

One reference is made to the inhibitory action of tyrothricin in the presence of Gram-negative bacilli; but the inhibition can be counteracted with sulfasuxidine.[160] This, however, is an isolated mention of inhibition, and requires clarification. In fact, it has been stated that tyrothricin activity against Gram-negative bacteria can be increased by protamine.[161]

Neomycin has also been combined with important drugs other than antibiotics. For instance, in a study of dermatoses, the combination of neomycin and hydrocortisone acetate (Compound F) appeared to result in enhanced activity in selected cases complicated with pyoderma.[35]

Vehicles or Bases: The exceptional stability of neomycin in various vehicles and at varying temperatures obviously means that a pharmaceutical preparation of this antibiotic would be expected to have a long shelf life in the average pharmaceutical product.[74,115]

Neomycin is said to maintain its effectiveness in practically any vehicle, including both acid and aqueous solutions; and, as stated earlier in this report, over a pH range of approximately 2.0 to 9.0. In fact, its stability in aqueous and other vehicles is in striking contrast to many other antibiotics which are employed against cutaneous infections.[26,107]

It can be used locally in aqueous solutions as compresses, soaks, and irrigations; and it is also stable in petrolatum bases at ordinary temperatures.[14] It can be employed in aqueous or other suspensions, along with many different medicinal drugs or chemicals. It is, of course, completely suitable for incorporation in tablets, capsules, and other dry forms.

As the only broad-spectrum antibiotic which is stable and soluble for an indefinite period, it is claimed to be possible to prepare indefinitely stable neomycin lotions.[107]

There is no universal acceptance of one kind of vehicle or base over another. For instance, in comparing the efficacy of neomycin in a water-miscible base, a petrolatum-lanolin ointment base, and in an aqueous solution, one group was impressed with the superiority of the ointment base over the water-miscible base.[26] The formulas employed were as follows:

(a) *Water-miscible base*, containing 5 mg. per Gm. of neomycin sulfate, comprised of: methylparaben, propylparaben, sodium lauryl sulfate, polyethylene glycol 1500 (carbowax), cetyl alcohol, spermaceti, petrolatum, triple distilled water.

(b) *Petrolatum-lanolin ointment base*, containing 5 mg. per Gm. of neomycin sulfate.

(c) *Aqueous solution*, containing 5 mg. per cc. of neomycin sulfate.

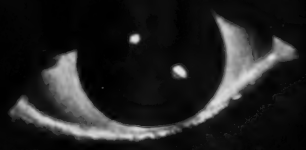
This group also tried a greaseless base of carboxymethylcellulose, and a bentonite lotion, in concentrations up

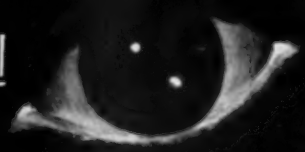
(*Continued on page 276*)

she spends

$64 billion

a year!





After the rent, taxes, utilities, and other basic fixed expenditures are all taken care of, American women spend $64-billion on such discretionary items as soaps, cosmetics, perfumes, specialty food items and hard goods. In round figures, that's about 80 percent of all such items bought each year.

So you see, *she's* the one we have to sell. And to sell her, we have to give her what *she* likes.

So let's take your product—put it in a package that's lightweight, easy-to-use, beautiful in color and design—and she just can't resist. The sale is yours.

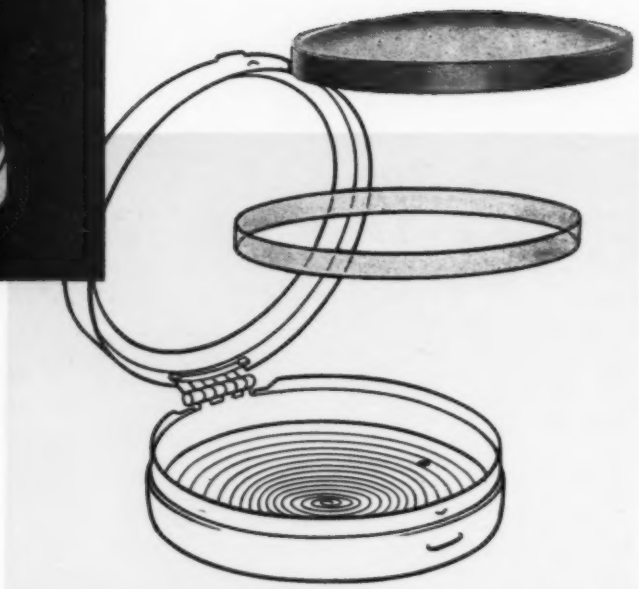
Imco containers can be made in any shape or color under the sun . . . either by special design, or from our wide range of attractive stock bottles. We invite you to talk with us about tailoring your package to her 64-billion-dollar taste.

IMCO CONTAINER CORPORATION

EMPIRE STATE BUILDING, RM. 6204
350 FIFTH AVE., NEW YORK, N. Y.

75TH AND CLEVELAND STREETS
KANSAS CITY 30, MISSOURI

Our bottles bear this trademark FLEXCEL



Another example

of a Scovill

"Special Design"

A Refillable Vanity

This refillable vanity for compressed powder or rouge is another example of Scovill's outstanding ability in the cosmetic container field. The pan is held by a polyethylene ring that is permanently fixed under the reduced neck of the container shell.

The pan is easily removed by inserting a straight pin or a hairpin in the small, off-center hole in the bottom of the container.

Lid opening is made easier by new, elongated rib styling on cover and body, and there's a choice of a glass mirror and brass bezel or a less expensive, *one-piece* metal mirror!

Designed to fill a special need—the desire for fine, polished brass containers, this vanity has all the special features to make it as popular as it is practical and to *increase refill sales.*

Ask your Scovill representative to demonstrate this latest development of Scovill's Drug and Cosmetic Container Division. He'll tell you how we can help you find *just* the container you've been looking for!

Many manufacturers who have container problems call us. We feel certain that our engineers will be able to help you as they have so many others.

SCOVILL-MADE Containers

Scovill Mfg. Co., 63 Mill Street, Waterbury 20, Conn.

Not when you use KIMPAK !

New KIMPAK 301 is the practical solution to safe packaging of fragile cosmetic containers. With the ability to absorb liquids up to 16 times its own weight in a matter of seconds, new KIMPAK 301 more than meets Parcel Post regulations. New KIMPAK 301's shock-absorbing characteristic provides positive cushioning protection against these major causes of breakage:

1. Shock and rough handling. KIMPAK is a soft, cushioning material that forms an effective shock absorbent barrier against these shipping hazards. It molds itself readily to irregularly shaped items and eliminates dangerous high and low spots.

2. Movement within the package. KIMPAK is absolutely uniform in thickness from end to end and edge to edge. This permits a tight, snug pack with the fragile containers nestled into the KIMPAK to prevent movement.

Breakage is but *one* of the problems encountered in cosmetic packaging. Specify KIMPAK (either decorative white 201 or the new low-cost utility 301) and these problems are solved. For more details concerning KIMPAK, mail coupon below.

SPECIFY KIMPAK TO SOLVE THESE INTERIOR PACKAGING PROBLEMS:

Leakage
Breakage
Conformability
Ease of handling
Appearance
Cleanliness

Whatever your protective interior packaging requirements, there is a Kimpak specification that does the job... better!

Kimberly Clark
INTERIOR PACKAGING
KIMPAK

KIMBERLY-CLARK CORPORATION
Neenah, Wisconsin

We would like to learn how KIMPAK can provide better protection for our products. Please send complete information.

Name .....

Firm .....

Street Address .....

City ..... *Zone* ..... *State* .....

control's the thing...

WITH ANCHOR HOCKING, TOO

No billiardist becomes a cue master without perfect *control.* And *control* is important, too, in the manufacture of Anchor Hocking quality products.

From the selection of all raw materials to the final production line inspection, Anchor Hocking employs literally hundreds of exacting *controls,* tests and checks involving many scientific testing devices. Although each factory maintains a laboratory of its own for quality control purposes, central laboratories at Lancaster, Ohio, serve as a control center for all—veritable watchdogs that make certain that Anchor Hocking products comply with their rigid specifications.

Eleven strategically located factories and sales-service representatives in 25 principal cities in the U. S. and Canada await the opportunity to serve you with controlled high quality Anchor Hocking products.

Anchorglass® Containers are uniformly strong, tough, dependable—high in chemical durability, accurate in dimensions, capacity and finish. . .a result of exacting quality controls.

50th Anniversary

Technicians regularly cut and analyze sections of containers to check the uniformity of glass distribution so essential to strong containers.

The optical comparator enlarges subjects up to 62½ times . . . is of inestimable value in checking glass container finishes, for example.

All Anchorglass Containers are subjected to close and careful inspection by specially trained selectors before packing and shipping.

ANCHOR HOCKING GLASS CORPORATION

GENERAL OFFICES — LANCASTER, OHIO

ANCHORGLASS CONTAINERS, ANCHOR METAL AND PLASTIC CLOSURES, ANCHOR SEALING MACHINES, CARTONS AND PACKAGE ENGINEERING SERVICE. . FOR PACKERS, MANUFACTURERS, BOTTLERS OF FOODS, DRUGS, HOUSEHOLD CHEMICALS, COSMETICS, TOILETRIES, BEVERAGES, BEERS, ALES, WINES AND LIQUORS.

Crown Closures assure trouble-free application. Because Crown Closures are continuously tested and checked during their manufacture, they are unexcelled for precision and uniformity. This means smooth, untroubled action on production lines.

Crown Closures seal dependably. The special features of Crown Closures, such as the famous Deep Hook Thread on Screw Caps and scientifically selected liners, mean sure protection... no matter what type of product you pack.

Crown Closures have the features consumers want. Today's consumers want protection *and convenience* in the closures on the packages they take home. Crown Closures answer their demands. They can be removed easily . . . they re-seal tightly . . . and they protect the original quality of the product.

Crown's Laboratory Service

Crown maintains two laboratories. One for research and development, the other as a customer's consulting service. The services of the latter are available without cost to help packers select the closure and liner best suited for their individual products.

Crown's Design Service

Customers of Crown may use without cost the services of a comprehensive design service. New designs will be created or adapted from present labels or trademarks.

CROWN CORK & SEAL COMPANY, INC. *Closure Sales* · BALTIMORE 3, MD.

World's Largest Maker of Metal Closures

Changing Distribution Patterns in Cosmetics

by Richard Salomon

Probably the most talked about and the most critical problem in the cosmetic industry today is the way in which many leading cosmetic manufacturers are changing their traditional way of doing business. Because of this change some leaders are abruptly and drastically changing the pattern of distribution in which their products are sold.

Among the many factors which are bringing about this change is the emergence of the grocery super-market as a huge new volume outlet for this industry, the employment of television as a potent method of mass communication and mass demonstration and the competitive pressure of one leading company which has employed these methods with startling success.

The emergence of single specialties capable of mass advertising, mass selling and mass distribution is the new dynamic factor which has been added to this industry.

The article which we present here is an abstract from a speech by Mr. Richard Salomon, President of Charles of the Ritz. Mr. Salomon, who has been president of his company for nearly twenty years, is eminently qualified to present the viewpoint of a company which has made a conspicuous and consistent success of selected distribution.

There have always been in our industry two fairly distinct methods for a manufacturer to do business . . . one has been the franchise method represented by houses like our own . . . the other has been a broad distribution backed up by the heaviest advertising monies available. The franchise house has customarily looked to the department store as its primary outlet and has spent its money on promotion in and with the store. The mass distributed line has kept to a minimum its expenditures with any individual store and has put all of its resources behind national advertising in order to force a demand which would be filled, not only in the department store, but in every conceivable outlet which at the time was handling cosmetics. This has been a time honored division in the industry and there has been nothing wrong with either approach on the part of the manufacturer if he was consistent in that approach.

What has happened now that causes me to feel that this old order is changing? I believe that what has happened, and I think you will agree with me, is that a firm called Hazel Bishop has enjoyed a tremendous success.

Hazel Bishop, after carefully pre-testing its advertising appeal, launched a multi-million dollar campaign to make its name a household name in the sale of lipsticks, and has come from no place at all in the very short span of three years to be the leading lipstick on the American market. It has done this through completely widespread distribution. Their own statement on the subject of distribution is that the lipstick is presently on sale in 140,000 outlets throughout the country. It is on sale, and I quote from their prospectus "through variety chains, drug wholesalers, independent and chain druggist stores, as well as through department stores and beauty salons;" in short, every place that sells cosmetics or can reasonably hope to sell them. This distribution pattern is a logical outgrowth of several million dollars a year in advertising. When a manufacturer spends this kind of money he must make his product available to the consumer anywhere that she chooses to look for it. The product then becomes a utility item, devoid of glamor, devoid of fashion.

It is imperative to realize that if a manufacturer is going to seek distribution in super-markets, for example, he is going to have to concentrate his efforts on one or

two specialties. Only fast turnover, demand items can be sold by a super-market. Every manufacturer who goes into that type of distribution will find that the super-market will be interested only in the items which move fast. This will give rise to a number of specialties originating in each cosmetic house, and it will be these specialties which will receive the advertising monies that will make them demand items which can be moved in quantity by a super-market.

I am confident that department stores by and large will solve the problem intelligently. All of this brings me to a consideration of how the department store can react to the challenge of this changing pattern of distribution. As I see it, there are three courses which a store can follow logically in dealing with these new forces that are at work in our industry, and I propose to examine each.

1. A certain number of buyers and merchandise managers will look at the entire situation, particularly if Fair Trade price maintenance goes out of the window, and there is a possiblity that it will, and conclude that since most of the lines they carry are being distributed in cut price outlets like discount houses and super-markets the best solution in the treating of cosmetics is to throw out the whole department. This has been the answer of many stores to the challenge of the discount house in the appliance field. It would represent one more step along the lines of retrenchment in department store activity. It would be the most drastic solution, and of course its effect on limited distribution lines would be enormous. It is one of the things that can bring us screaming out of our sleep.

2. The second way would be for the department head to look into the future and decide that his own best interest is served by throwing out entirely those lines which have elected mass distribution and all that it implies. Such an action would indeed safeguard the store's future as regards maintaining its fashion prestige and authority. It would also safeguard the mark-up since the limited distribution lines would provide full mark-up and the mass distributed lines, which would be sold at cut prices, would not be in the department. However, such an action would result in a loss of volume to such a degree that it might be necessary for management to curtail cosmetic space, or even remove it from the street floor entirely. I would therefore not recommend it as a long range solution.

I have examined two reactions which you may have in the face of this changing pattern of distribution, and have ruled out both of them because I do not think either one can maintain the department store in the position it should occupy. The first, namely to throw out the whole department obviously won't keep the department store in the cosmetic business. The second, which is to disregard one's competition entirely, is going to cause the department to shrink in volume and importance. The third, however, is the one I would urge upon you. It calls for two distinct steps.

A. First the buyer would create a self-service section in which he would compete on price with the super-market and the discount house on that merchandise which would be mass distributed. Those lines which chose mass distribution would be discontinued as favored resources, and only those specialties of theirs which were highly advertised would be represented in the self-service section. The resultant loss of volume would not be substantial because at that point the manufacturer would be putting so much of his effort on one or two items that these items could easily be stocked in self-service units and 90 per cent of the line's potential volume could be realized in that fashion. Furthermore, the inventory required to stock that line presently could be cut down by 50, 60 or 70 per cent since the store presently attempts to carry a broad line of this manufacturer's products and would no longer be under compulsion to do so.

B. The second part of this same farsighted buyer's approach would be to make known to manufacturers who are considering so distributing their merchandise that this is the fate that awaits them. He would also go to those manufacturers who he has reason to believe are going to maintain limited distribution and arrange with them to promote harder than ever those lines of merchandise on which he can procure his full mark-up and on which he can enjoy greatly increased volume.

What is most important is that action be taken fairly promptly along these lines. Every manufacturer who watches his competitor open a chain of super-markets and at the same time enjoy the full cooperation of the local department store wonders how long department stores will permit themselves to be used to promote the prestige of a manufacturer whose real desire is super-market volume. If the store permits the mass distributor to carry water on both shoulders more and more manufacturers will come to the decision that they can have their cake and eat it too.

I am aware of the fact that pressures exist on a department manager to produce present volume and present profits, and let the devil take care of tomorrow. Merchandise managers put this pressure upon buyers, and they only transmit what comes to them from top management. Therefore, even if the buyer wanted to adopt this solution and put it into immediate practice he would encounter opposition upstairs. However, a good buyer should be able to sell his merchandise manager, and in turn his management, on the advisability of a long range program to protect the store's position in the community.

To boil the whole matter down, it would seem to me that the current trend is one which is going to separate cosmetic manufacturers into truly mass distributed lines and franchise lines. The only way to keep sufficient manufacturers on a franchise basis is to begin to support them wholeheartedly, and gradually diminish the emphasis placed on mass distributed lines.

In closing, I must make one point clear; that there is nothing wrong with people who choose to mass distribute their merchandise. It is an honorable, efficient,

(*Continued on page 248*)

Perfume: Bourjois
Bottle: Maryland Glass
Valve and gold cap: Risdon
Gold foil label: Foxon
Filled by CONTINENTAL

Can we spray an idea your way? Package for aerosol dispensing . . . and do it in glass like our sales-minded client, Bourjois, does. In this suave push-button bottle lies the essence of sound merchandising. Push-button containers invite immediate attention and examination . . . give both men and women shoppers cleanliness, protection, economy. Glass aerosols assure universal sales appeal for personal products like perfumes, sun tan oil, hair dressings, deodorants, etc. . . . through high content visibility, color display, and an unlimited range of inexpensive bottle shapes and sizes for flexible, competitive pricing. Capitalize on the trend to glass aerosols now. Boost profits. Contact us for a free product evaluation.

COMPLETE FILLING SERVICE. Get Continental's famous "follow-through" on liquid, spray and foam packaging . . . in glass or cans. Two modern Midwest plants give you on-time delivery and freight savings plus warehousing and drop-shipping in bulk lots. We handle paper work, and protect your product with lab analysis *before* . . . quality control *during* . . . and careful handling *after* production.

CONTRACT AND CUSTOM FILLING

LIQUID *SPRAY* *FOAM*

MAIN OFFICE • 123 NORTH HAZEL STREET, DANVILLE, ILLINOIS

CONTINENTAL FILLING CORPORATION

PLANTS • DANVILLE, ILLINOIS — HOBART, INDIANA

LOOK AT THE FLOOR . . .

you can see why this cap speeds production

Run Armstrong Hi-Tork® Caps for a few hours, then check your floor. Notice how clean it is—how free of the mess of broken caps often found around high-speed lines.

You see a cleaner floor because the extra strength in Hi-Torks reduces breakage. Each element of the cap—dome, thread, and skirt—is carefully designed to take exactly its share of torque and impact. This extra strength means you can run your lines at higher speeds with no increase in cap breakage.

We'll be glad to help you set up this test. For details, call your near-by Armstrong office or write Armstrong Cork Company, Glass and Closure Div., 5302 Chambers St., Lancaster, Penna.

Armstrong "HI-TORK" MOLDED CAPS

Abrupt package modernization

When a leading drug manufacturer redesigns the package of one of the best known trade-mark names in this industry and describes it as the first major redesign in sixty-eight years, then that certainly ought to be news. The new package and the new design for Bromo Seltzer, created for the Emerson Drug Company, Baltimore, Maryland, by the package designers, Lippincott & Margulies, provides a radical contrast between the new and the old in this industry. It is an interesting example of the way in which a package is designed to meet the conditions of today at the point of sale and in consumer recognition.

It is worth observing here that it is not over twenty years ago when packaging first became recognized as a separate art or a separate science or whatever you might want to call it. The idea then of changing even a dot or a comma on a package which had been identified by the consumer for many years was considered by most managements to be equivalent to brand suicide.

It was at this time that the first timorous approaches were made to package changes. The reason for the change at this time was not basically because of any point-of-sale problem, but because of an instinctive feeling of a change of attitude on the part of the consumer toward the package as a visual emblem of product quality. At this time the package changes were largely an elimination of some type on an overcrowded label or carton and in a sense it was an emergence from the heyday of the patent medicine into a more ethical conception of medicine and the beginning of an appreciation of design in packaging.

We will remember some of these packaging changes and the prolonged step by step that was felt necessary so that the consumer would either sense the transition or would not be actively aware that a change was taking place. We think it was in an early Lehn & Fink package that a program of three years and something like six or eight progressive changes were believed necessary to arrive at the new package.

Now Bromo Seltzer is making this abrupt change in one move and anyone who examines the new compared with the old must be impressed by the ethical presentation of the new package as compared to the old. It has obvious advantage in point of-sale-recognition and its attention value for such things as impulse pickup.

The new Bromo Seltzer bottle shown at the right in the picture with his article retains the familiar blue color of the old bottle at the left, features crisp lines and has a new cap which does double duty as a closure and a dosage measure. *(Continued on page 248)*

LATEST DU PONT SURVEY REVEALS:

Aerosol distribution up . . . sales up

DEALER ACCEPTANCE

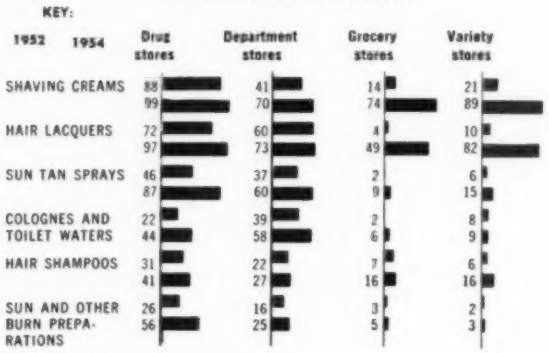
Q. Do dealers *like* to sell aerosol products?

As the chart below shows, almost 9 out of 10 of the retailers stocking aerosols said they do. Dealer acceptance like this—undoubtedly reflecting the sales success of aerosols—can be a great asset to a manufacturer.

DISTRIBUTION

Q. What personal aerosol products do you stock?

% of dealers who stock aerosols



NOTE: Only leading aerosol product types are shown

Du Pont can help you explore the benefits aerosol packaging offers your product

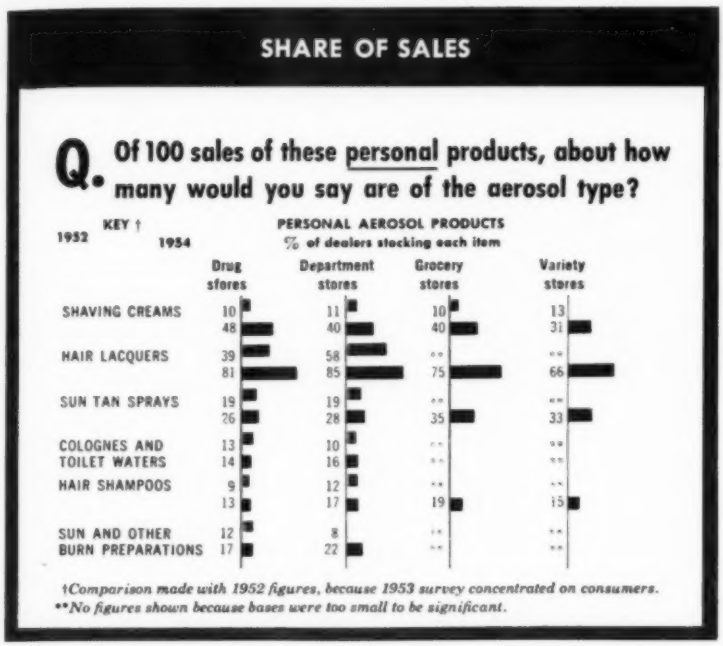
Take advantage of this opportunity to learn about the aerosol field. Since the earliest days of aerosols Du Pont has manufactured "Freon"* fluorinated hydrocarbon propellents — almost universally used in aerosol formulations. Du Pont has also had occasion to work with many leading manufacturers of aerosol products and their suppliers.

Laboratory Research. In addition to all this experience, Du Pont offers you the facilities of our "Kinetic" Chemicals Laboratory—unsurpassed for work with aerosols. Experienced chemists will help you develop and test formulations suited for aerosol packaging. And they'll even help you set up a laboratory of your own for aerosol testing and research.

Market Research. You can get information for your studies of the aerosol market from Du Pont, too. Our Annual Survey of the Aerosol Market is the outstanding source of factual information on aerosol dealers and consumers.

Du Pont "Freon" Propellents. No one is in a better position to advise you on aerosol propellents than Du Pont, manufacturer of "Freon" safe propellents for years. Du Pont "Freon" propellents are used in almost all aerosol products sold today—because manufacturers know they can rely on Du Pont for pure, uniform quality. "Freon" propellents are nonflammable, nonexplosive and virtually nontoxic. There are actually many "Freon" compounds, and Du Pont can help you select the one—or combination—best suited for dispensing your product the easy, aerosol way.

...dealer acceptance high


SHARE OF SALES
Q. Of 100 sales of these personal products, about how many would you say are of the aerosol type?
KEY †
1952
1954
PERSONAL AEROSOL PRODUCTS
% of dealers stocking each item
Drug stores
Department stores
Grocery stores
Variety stores
SHAVING CREAMS 10 48 11 40 10 40 13 31
HAIR LACQUERS 39 81 58 85 ** 75 ** 66
SUN TAN SPRAYS 19 26 19 28 ** 35 ** 33
COLOGNES AND TOILET WATERS 13 14 10 16 ** ** ** **
HAIR SHAMPOOS 9 13 12 17 ** 19 ** 15
SUN AND OTHER BURN PREPARATIONS 12 17 8 22 ** ** ** **
†Comparison made with 1952 figures, because 1953 survey concentrated on consumers.
**No figures shown because bases were too small to be significant.

STUDY the figures on the left and you'll get some idea of what aerosol packaging can do for personal products. In the past two years aerosol packaging has helped win friends for many of these products among retailers . . . brought them wide distribution in many types of outlets . . . given them a fresh sales stimulus. Study the possibilities for your product in this fast-selling, profitable field.

SEND FOR FREE REPORT OF SURVEY FINDINGS
WITH ANSWERS TO THESE QUESTIONS ON AEROSOL MARKETING

How has distribution of aerosols grown in the last five years in drug stores? In variety stores? Department stores? Other types of stores?

★ ★ ★

What household aerosol products do each of these types of stores stock? What personal aerosol products?

★ ★ ★

How do dealers think aerosol products are selling in their own stores in competition with non-aerosol products?

★ ★ ★

How many brands of the various aerosol household and personal products do the dealers stock?

What display material have dealers received from manufacturers of aerosol products during the past year? How much of it did they use?

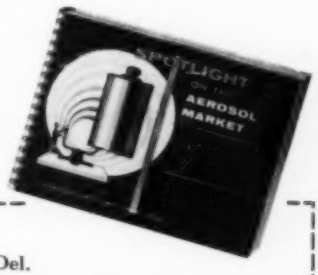
★ ★ ★

What type of display and advertising material do the dealers think most effective for aerosol products?

★ ★ ★

Where in the stores did interviewers find aerosol products located?

—*and many others*



MAIL THIS COUPON FOR YOUR COPY

KINETIC

FREON

SAFE PROPELLENTS

"Freon" is Du Pont's registered trade-mark for its fluorinated hydrocarbon propellents.

DUPONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

E. I. du Pont de Nemours & Co. (Inc.)
Room 11500 Nemours Bldg., Wilmington 98, Del.

Please send me the booklet "Spotlight on the Aerosol Market". I am interested in aerosol packaging for _____

Name _____ *Position* _____

Firm _____

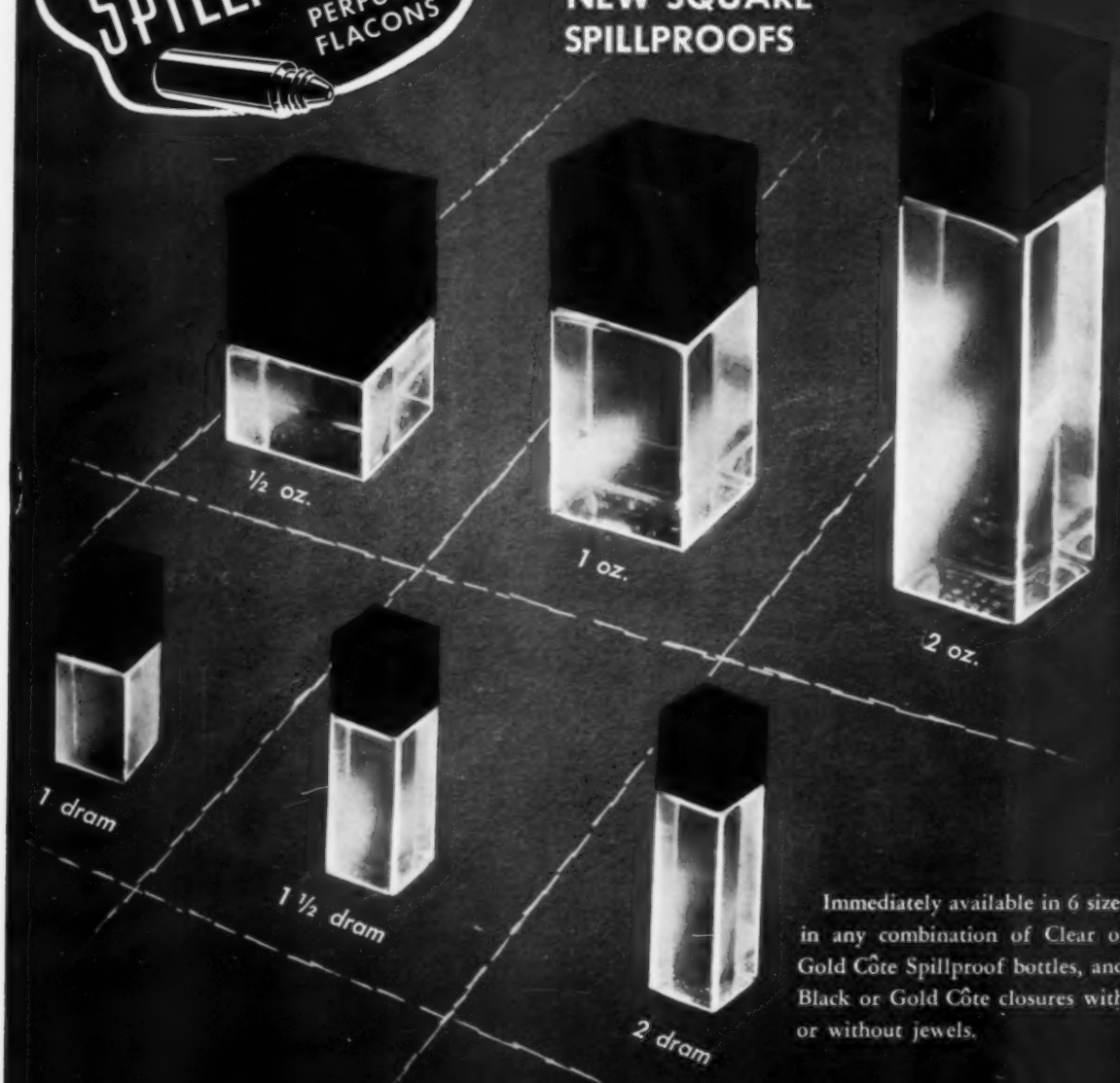
Address _____

City _____ *State* _____

152

RICHFORD SPILLPROOF PERFUME FLACONS

. . . . . have done their part
Now let your Imagination
Run Wild with these
NEW SQUARE
SPILLPROOFS



Immediately available in 6 sizes in any combination of Clear or Gold Côte Spillproof bottles, and Black or Gold Côte closures with or without jewels.

The smartest lines in 1955
will feature these sensational flacons.

Write today for samples and prices.

RICHFORD
CORPORATION
404 FOURTH AVENUE, NEW YORK 16, N. Y.

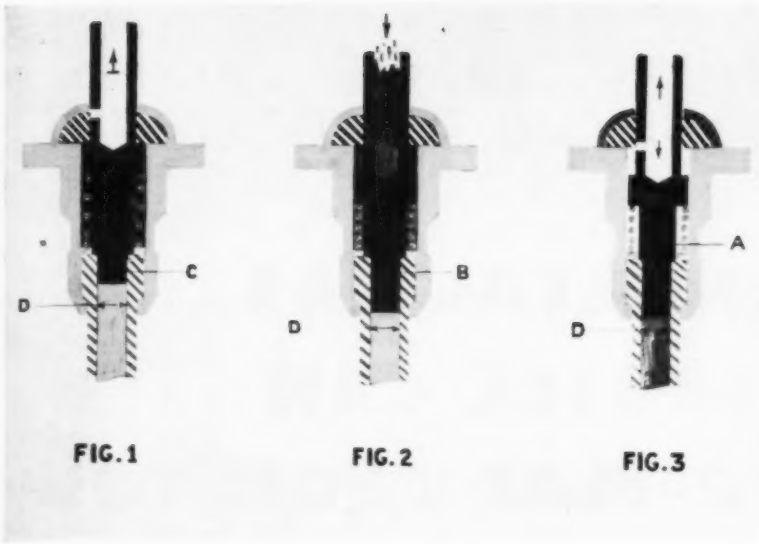


FIG. 1 FIG. 2 FIG. 3

Figure 1 shows the metered valve in the closed position ready to be sprayed. The cavity which houses the spring is also filled with the material to be dispensed. When the valve is depressed, the seal is broken and the liquid comes out. **Figure 2.** During the down stroke of the valve, the liquid passes through the cavity and out the orifice until the seal is made at the extreme metered position as shown in Figure 3. The actuating stem, as shown by diameter B, is a truncated member, being slightly smaller than diameter D, permitting vapor to by-pass in lieu of liquid, insuring complete evacuation of the cavity without any after-drip. **Figure 3.** In the extreme metered position or evacuated position, the seal is made on the polyethylene tube and diameter A. Diameter A being larger than diameter D forms a positive shut-off when stem is firmly depressed. When the valve is released, the polyethylene seal is broken and the valve returns to seal on the rubber gasket, thereby refilling the chamber with liquid and the cycle is repeated. Diameter C, being smaller than diameter D, provides the passage for filling the cavity. It should be noted that on the return stroke, the orifice leading to the outside chamber seals before liquid is broken on the polyethylene stem.

Metered Aerosol Dispensing*

by H. R. Shepherd

VICE-PRESIDENT, CONNECTICUT CHEMICAL RESEARCH CORPORATION

The impact made by the self-dispensing aerosol in the household chemical field in the past, as well as its present vibrant growth in the cosmetic field with impending developments in the pharmaceutical field are well known to all of you. There isn't a company which hasn't, in some way, kept tabs on the possible application of the aerosol method to their old and new product thoughts.

As is very often the case in a new industry with new developments (witness the recent past in the aerosol field), there has been a tendency to develop the product around the package as a primary method of approach. It is the intention and purpose of this brief presentation to bring to your attention a new and enlightened attitude on the part of the aerosol industry; i.e., the package and method are being modified to suit the product and its intended use. This is being done through the medium of a new valve mechanism known as "*Meterspray*," which is an aerosol valve design which will dispense a predetermined quantity of a given product.

You are undoubtedly all aware of the fact that there exists in the cosmetic industry and more so in the pharmaceutical and proprietary drug field, packages and packaging devices which permit "dosage dispensing," i.e. pills, ampules, drops, etc. It is not the intention of this presentation to go into the motivating forces that have caused the consumer to select self-dispensed aerosol products over the counterpart in "conventional packages," but it suffices to say that where the aerosol method has been used and properly developed, consumer acceptance has been almost universal. Therefore, many of the products that require dosage dispensing will now find this type of metered mechanism an answer to a long awaited need. Specific requirements for metering can be primarily the following factors:

1. Economic
2. Pharmacological and toxicological
3. Effectiveness of the product
4. Psychological (merchandising)

The above factors would vary with each product, and in many instances it may be a combination of factors which makes it imperative that a self-dispensing metering valve be used on a product. At the moment there has been one commercial presentation in the field in the form of a perfume purse dispenser, where the dispensing of highly expensive perfumes using the aerosol method has met with tremendous excitement and acceptance on the part of whoever has had an opportunity to use the product.

The present commercial development of the metered valve principle was one brought to commercial realization by Mr. Lawrence Ward of Meterspray, Inc., an

(Continued on page 248)

*Reprinted from proceedings of the Scientific Section of the Toilet Goods Association, No. 22, December, 1954.

If your product can be sprayed...

CONTINENTAL HAS AN AEROSOL CAN TAILOR-MADE FOR YOU

DOME TOP — Domes attached and equipped with standard 1" curled opening for all popular valves. Regular (12 oz.) or Midget (6 oz.).

CONCAVE TOP—Tops furnished loose and perforated with hole-punch for specified aerosol valves. Regular (12 oz.).

DOME TOP — Domes furnished loose and perforated with hole-punch for specified aerosol valves. Regular (12 oz.) or Midget (6 oz.).

More than 60 sprayable non-food products are now sold in Continental's three styles of aerosol cans. One of these containers will fit the exact needs of your product too. As part of Continental's Tailor-Made Package Service, we provide on-the-dot deliveries of all the cans you can use. Individualized engineering and master lithography are available... and so are contacts with valve suppliers and commercial fillers. It'll be a pleasure to advise you in any phase of your packaging operations. Why not call Continental at your convenience?

CONTINENTAL CAN COMPANY

Eastern Div.: 100 E. 42nd St., New York 17
Central Div.: 135 So. La Salle St., Chicago 3
Pacific Div.: Russ Building, San Francisco 4

Rx SANITARY SEAL your products with Du Pont **CEL-O-SEAL** bands

REG. U. S. PAT. OFF.

Laboratory-sealed products reach the druggist and the consumer exactly as prepared. A tamperproof CEL-O-SEAL band guarantees quality and purity, prevents losses due to lid back-off.

Quality control and uniformity of contents are maintained at all times. Du Pont CEL-O-SEAL holds primary closure secure, assures true measure. Consumer confidence is inspired in a product "topped off" with an attractive CEL-O-SEAL band.

Eye-catching individualized CEL-O-SEAL complements your product, gives you a standout package on the shelf, establishes family identification for your entire line of products. Brand name, sales messages, and suggested uses are effectively carried right to the point of sale.

Decorative and functional, Du Pont CEL-O-SEAL bands are also ideal for specialty items, bundling deals, unusual closure problems on odd-size containers. Bands can be an attractive label or secondary closure—or both. They may be hand- or machine applied.

FREE PACKAGING SERVICE: See what CEL-O-SEAL can do for your product. Send us a labeled container. Our packaging specialists will band it, make recommendations, return it for your inspection. No obligation, of course. Write "CEL-O-SEAL" Section, E. I. du Pont de Nemours & Co. (Inc.), 10424-I Nemours Bldg., Wilmington 98, Delaware.

"CEL-O-SEAL" cellulose bands are also sold by Armstrong Cork Co., Lancaster, Pa.

DU PONT
REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
. . . *THROUGH CHEMISTRY*

DU PONT **CEL-O-SEAL** BANDS

REG. U. S. PAT. OFF.

Packaging and Selling

Mass Specialties

Cosmetic manufacturers should be interested in what is happening in the book publishing business. This is because there seems to be a curious parallel in a lot of practices which have grown up in recent years in the book business which are strangely similar to those now occupying the attention of cosmetic manufacturers and causing uneasiness in so many quarters.

The book business has in many ways resembled the cosmetic industry. Up until several years ago, there was a well-defined group of book publishers who sold through established retail channels where personal selling, and an ability to build up a book clientele were the signs of success.

Most book publishers were widely diversified in the titles which they published. Their products were hard-covered books which rarely fell below $1 in price, and all of these companies followed a traditional method of doing business.

A few years ago, the "paper backs" hit the book industry with a bang. In the paper back a publisher selected a single title which he thought would have mass appeal and which could go into mass distribution in a sales volume that would support an active and an energetic promotion campaign. This is strangely similar, it seems to us, to such operations as Hazel Bishop, Toni, Revlon and other mass advertising specialists in cosmetics.

These paper back publishers have paid scant attention to the traditional or classical lines of distribution. The paper back books are for sale now in considerably more than 100,000 outlets, which include quite a variety of stores which never handled books before. Among these new stores the grocery super-market has been a favorite new retailer.

An epidemic of promotions which, from the viewpoint of money spent and the variety of gimmick ideas, is another parallel of striking interest between these two industries.

Now, according to a report in the Wall Street Journal and an article in the Saturday Review, these paper-back books are being dumped back on the publishers in a way that has the paper-back people in a dither. It is already bringing some failures. Said one leading executive of a top paper-back book company, "This business busted its britches. I doubt if more than three houses are operating in the black this year."

Just what all this means remains for 1955 to determine. It can mean over-production, or more specifically, over-distribution. It is possible that paper books, as with certain classifications of cosmetics, are now for sale in so many stores that the amount of business available to a large majority of these stores becomes so trivial that it is not worth visibility or any form of display at the point of sale. That is when things begin to happen to the sale of a product.

Expanding Collapsible Tubes

The collapsible tube industry anticipates another year of high-level production spurred by expanding demands from the manufacturers of dentifrices and cosmetics. This was a year-end forecast of Lester B. Platt, Executive Secretary of the Collapsible Tube Manufacturers' Council.

While final figures are not yet available, the industry's 1954 output, according to Mr. Platt, will approach and may possibly equal or exceed 1953 production of 6,682,405 gross of nearly a billion tubes.

The collapsible tube industry is made up of 16 manufacturers and 20 plants.

A survey of tube users in the first ten months of 1954 revealed tooth paste accounting for approximately half of all production. Household and industrial products, medicinals and pharmaceuticals consumed more than one-third. Cosmetics, shaving creams and foodstuffs make up the remainder.

It is estimated that in 1954 the industry will have consumed approximately 19,000,000 lbs. of lead, 6,160,000 lbs. of aluminum and 1,250,000 lbs. of tin.

All from a Present

This is the saga of a Christmas present that became an advertising campaign. Bennett Cerf who conducts that intriguing department in the Saturday Review called Trade Winds, recently had the following to say in his department.

"Did you know that Schiaparelli had added an after-shaving lotion for men to her line of toiletries? Somebody gave me a bottle for Christmas last year, but being a simple Palmolive boy myself, I hid it sheepishly on a back shelf. Last week, in a moment of wild abandon, I sampled it. Gad, man, it is heady stuff! "Snuff" is its brand name, and although the $2.50 price tag may be a deterrent at first, isn't it worth a premium really to smell as tangy and look as tweedy and cock of the walky as all those boys in the ads do? Seriously, I like the fragrance so much I laid in a full winter's supply (two bottles). I suggest it as a perfect birthday or week-end gift, plus a couple of books, of course, for

New wings for your product... the first aerosol container with a cosmetic look!

Slimly gauged for dainty handling –

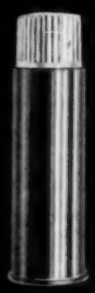
Styled with her dressing table in mind –

Truly, the first cosmetic wings for your product –

A perfectly functioning, seamless aerosol container with fashion in its every line.

Immediate delivery – holds up to 2¼ ounces.

Will gladly supply free sample with your product in it.



SUNEX

DIVISION OF Sun Tube CORPORATION

NEW! Colorful Plastainer Vials BY OWENS-ILLINOIS

Plastainer vials are now available in a wide variety of attractive colors, opaque and transparent, with colorful matching closures. They are typical examples of the many sizes, shapes and colors of containers the broad plastic molding facilities of Owens-Illinois make possible to fill your needs.

You can package anything from candy beads to fishing tackle in Plastainer vials by Owens-Illinois. They protect contents from handling, air and moisture until used. Plastainer vials won't split or crack . . . have wide diameter for easy filling and stable base . . . come in 6 sizes: 3 to 15 drams.

Owens-Illinois packaging know-how and high-quality standards offer you the finest in plastic molding facilities . . . Injection molding . . . Compression molding . . . A complete range in plastics for packaging, for specialties.

Branch Offices:

Albany . . . . . New York	Columbus . . . . . Ohio	Memphis . . . . . Tennessee	Pittsburgh . . . . . Pennsylvania
Atlanta . . . . . Georgia	Dallas . . . . . Texas	Milwaukee . . . . . Wisconsin	Portland . . . . . Oregon
Baltimore . . . . . Maryland	Denver . . . . . Colorado	Nashville . . . . . Tennessee	Richmond . . . . . Virginia
Birmingham . . . . . Alabama	Detroit . . . . . Michigan	New Orleans . . . . . Louisiana	Rochester . . . . . New York
Boston . . . . . Massachusetts	Fresno . . . . . California	New York . . . . . New York	St. Louis . . . . . Missouri
Buffalo . . . . . New York	Houston . . . . . Texas	Oakland . . . . . California	St. Paul . . . . . Minnesota
Charleston . . . . . West Virginia	Indianapolis . . . . . Indiana	Oklahoma City . . . . . Oklahoma	Salt Lake City . . . . . Utah
Charlotte . . . . . North Carolina	Jacksonville . . . . . Florida	Omaha . . . . . Nebraska	San Francisco . . . . . California
Chicago . . . . . Illinois	Kansas City . . . . . Missouri	Peoria . . . . . Illinois	Seattle . . . . . Washington
Cincinnati . . . . . Ohio	Los Angeles . . . . . California	Philadelphia . . . . . Pennsylvania	Toledo . . . . . Ohio
Cleveland . . . . . Ohio	Louisville . . . . . Kentucky		

OWENS-ILLINOIS PLASTICS
AN (O) PRODUCT

OWENS-ILLINOIS
GENERAL OFFICES • TOLEDO 1, OHIO

the man who enjoys things a bit out of the ordinary." Apparently these were potent words because they stirred up quite a few inquiries from the readers of SR nad they so impressed the advertising agency that a new campaign is now in the making for Schiaparelli men's line making use of this copy.

Big Waste in Distribution

Some of the big companies that are making scientific studies of the rising cost of distribution are discovering a focal point toward which every act in marketing must be aimed. This focal point of all marketing is the attainment of balance and a continuity of flow of branded goods at the point of sale at all times.

The maintenance of balanced stocks and continuity of branded goods in the retail store is the big problem of marketing today because here is where big waste in distribution is taking place.

Part of the fault of attaining this ideal in marketing must rest with the retailer because of such policies as poor buying, over cautious buying or bad store management. Part of the fault also rests with the industry. Here are such ills as too many brands, what amounts to the virtual bribing of the retailer through advertising, demonstrators, purchase of counter space, etc., for products which are slow sellers and which uses up the capital and the selling ability of the retailer.

Part of the fault also rests with manufacturers, through non-progressive methods of packing, of shipping and inadequate warehousing.

Out of all this study the one immediate result that is visible is the large increase in adequate, convenient warehousing. This is a huge advantage available to the big corporations. An increasing number are not losing any time in making their goods quickly, immediately and less expensively available to the retail customers.

Editors Think So

A recent poll of country editors reveals that healthy people do not go to the doctor. Seven out of ten of these editors in an American press survey gave "Indifference" and "fear of learning that they have cancer," as the chief reason.

Strawberries to the Rescue

A little over two years ago, we commented briefly on an interesting employment of an aromatic product to overcome a serious industrial problem. This was the case of a large Southern Kraft paper manufacturer who was having serious trouble with personnel relations, as well as with the community, because of the very bad odors discharged into the air from the manufacture of Kraft pulp.

This problem was solved by a leading aromatic company at a cost, as we were told, of $80,000 a year to the paper company. One of the directors of this paper company was later quoted as saying that this was the best money that their company had spent for a very long time.

As an interesting example of how information of this sort can travel, we received an inquiry two years later from a member of the Legislature in New Brunswick, Canada, who stated that this news report had been brought to his attention and that he would like further information because this was also a serious problem in a community in his constituency.

Now we have run into an even more interesting application of the sort, in which we are sorry to say we have very incomplete information.

We were recently told that a medium-sized chemical plant in one of the valleys of Ohio was encountering a very serious problem because of a virtual revolt of all the people in the community against the gasses which were being discharged from its chimneys. These gasses contained chlorine and some other products which were poisoning the area, ruining paint, fabrics and furniture through out the town.

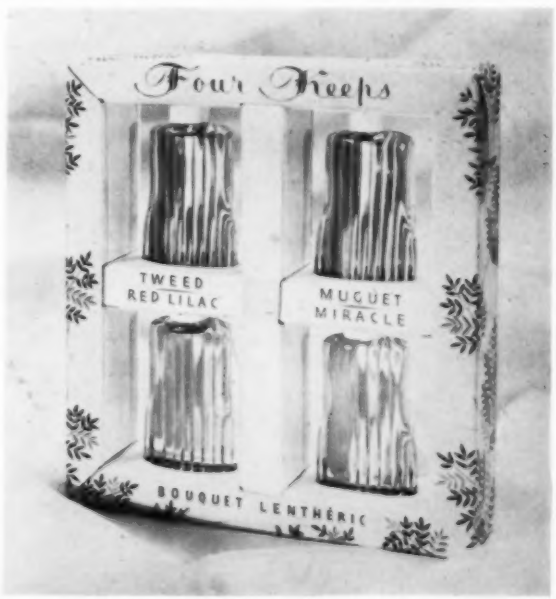
We were told that this problem was completely solved by some genius who took an ordinary red porous clay building brick, saturated this in a solution of a synthetic strawberry until fully saturated and then suspended this brick down the factory chimney.

We were told that this completely eliminated the chlorine and the other troublesome gasses, that it neutralized the odor with a touch of strawberry that very few laymen could detect and the only trouble that developed in this method of treating chimney gasses was the difficulty of securing the type of wire for suspending the brick which would resist flue heat.

Four Keeps

Lentheric's new Four Keeps promotion is based on an interesting package. The product is four one-ounce bottles which are individually molded replicas of the regular Lentheric Bouquet Bottles in the four odors. The name of each fragrance is molded into the glass and white caps are used.

The unusual feature is the carton. This is a box with four open windows in which each of the bottles is nested. The outside frame of the box is a delicate green and pastel Chartreuse highlights the inside of the windows.



CROWN SPRA-TAINER Does It Again!

Wins 7-of-11 Awards

IN NEW C.S.M.A. AEROSOL PACKAGING CONTEST

Again in 1954 Crown SPRA-TAINER, famous for *Modern Design That Sells*, walked away from all competition when the Chemical Specialties Mfrs. Assn. chose the year's best pressure packages. Crown customers won the Grand Award and 6 "firsts" in the 10 product classifications! Obviously Crown's package-design know-how, covering a *complete* line of cans for today's industry, helps products *look* better and *sell* better. Couldn't *you* use that knowledge?

GRAND AWARD
Best of All Entries
And
FIRST PRIZE
Hair Preparations
General Beauty Products, Inc.
New York City

FIRST PRIZE - Shave Products
Yardley of London, Inc.
New York City

FIRST PRIZE - Insecticides
Canada Rex Spray Co., Ltd.
Brighton, Ontario

FIRST PRIZE
Miscellaneous Personal Products
Walgreen Drug Stores
Chicago, Ill.

FIRST PRIZE - Artificial Snow
Plasti-Kote, Inc.
Cleveland, Ohio

FIRST PRIZE - Industrial Products
Mitchell Chemical Co.
Stratford, Conn.

CROWN

CROWN CORK & SEAL COMPANY, INC.
CAN DIVISION

One of America's Largest Can Manufacturers

PHILADELPHIA • CHICAGO • ORLANDO • BALTIMORE • NEW YORK • BOSTON • ST. LOUIS • SAN FRANCISCO

New Kind of C-Op

Southern California Pharmaceutical Association has developed a new kind of co-op advertising plan. Manufacturers are provided with distribution, in-store promotion and a guarantee of a minimum sale of their product. This seems like a marketing man's dream after the slugging most manufacturers get from department stores in their use of co-op advertising.

New Aerosols

The aerosol container is entering the pharmaceutical industry in a vigorous way in the treatment of burns, cuts and wounds. A new aerosol burn spray, that is Alke Mist, has been developed by the I. Landau Company of Cleveland, Ohio. This product is designed for the treatment of minor burns. It is formulated in a mixture of vegetable oils designed to replace the petroleum jelly pad. Alke Mist is packaged in a 4-ounce Aerosol Spray Cannister propelled by Freon mixture. Another product, which we hear has been introduced in the Middle West, provides a perfect antiseptic coating for cuts and minor wounds. This coating, which forms an elastic, visible cover to the wound, will admit air. We understand it has been clinically tested and approved.

Easy Package Changes

It wasn't too long ago when the slightest change in a package involved a major company policy decision. Usually these changes were made in slight degrees over a long period of time. Now apparently the owners of the big brand names either don't believe that customer loyalty is a very vital factor or they do believe that people like and want change.

Breakfast food manufacturers have been among the most energetic in proving that a package can undergo constant and continual change without affecting the brand recognition for the product. As one of the latest themes in this ever-changing package field, one food manufacturer is now reproducing famous paintings for a series on the carton.

Buyers Beware

If you haven't become interested in consumer motivation, you are out of step, in a rut, dead as a dodo and retired without knowing it. The psycho-boys, who are promoting the idea that all sorts of pitfalls and promises lie hidden in buying motivation by consumers and retailers, have grabbed the publicity band-wagon of this year in advertising and marketing and easily have the front seat in publicity and interest.

It must be said that so many interesting things are being turned up that provide small talk and cocktail-time conversation that these motivation studies are bound to grow in popularity.

Some big companies are spending a great deal of money in this direction and are uncovering many things about their product and their businesses that are shocking the directors as well as the office boys.

One of the recent motivation studies that intrigues us the most was the one that we hear was made for Corning Glass. Apparently, Corning has been dissatisfied with the way many buyers and engineers have refused to accept their logic in relation to glass piping. According to recently returned motivation study findings, "The engineers and purchasing agents have an emotional block about the glass pipes' fragility based upon experiences of their childhood. They learned as little boys that a broken water glass always led to a spanking." Accordingly, Corning's problem is now too, "We've got to get underneath and help the engineers and purchasing agents understand that they're relating this glass pipe to the broken glasses of their childhood." We are afraid that this sort of thing is going to lead to needless complications. We shudder to think what certain companies who fail to sell their product in satisfactory volume will conclude about childhood habits of buyers, chemists or engineers.

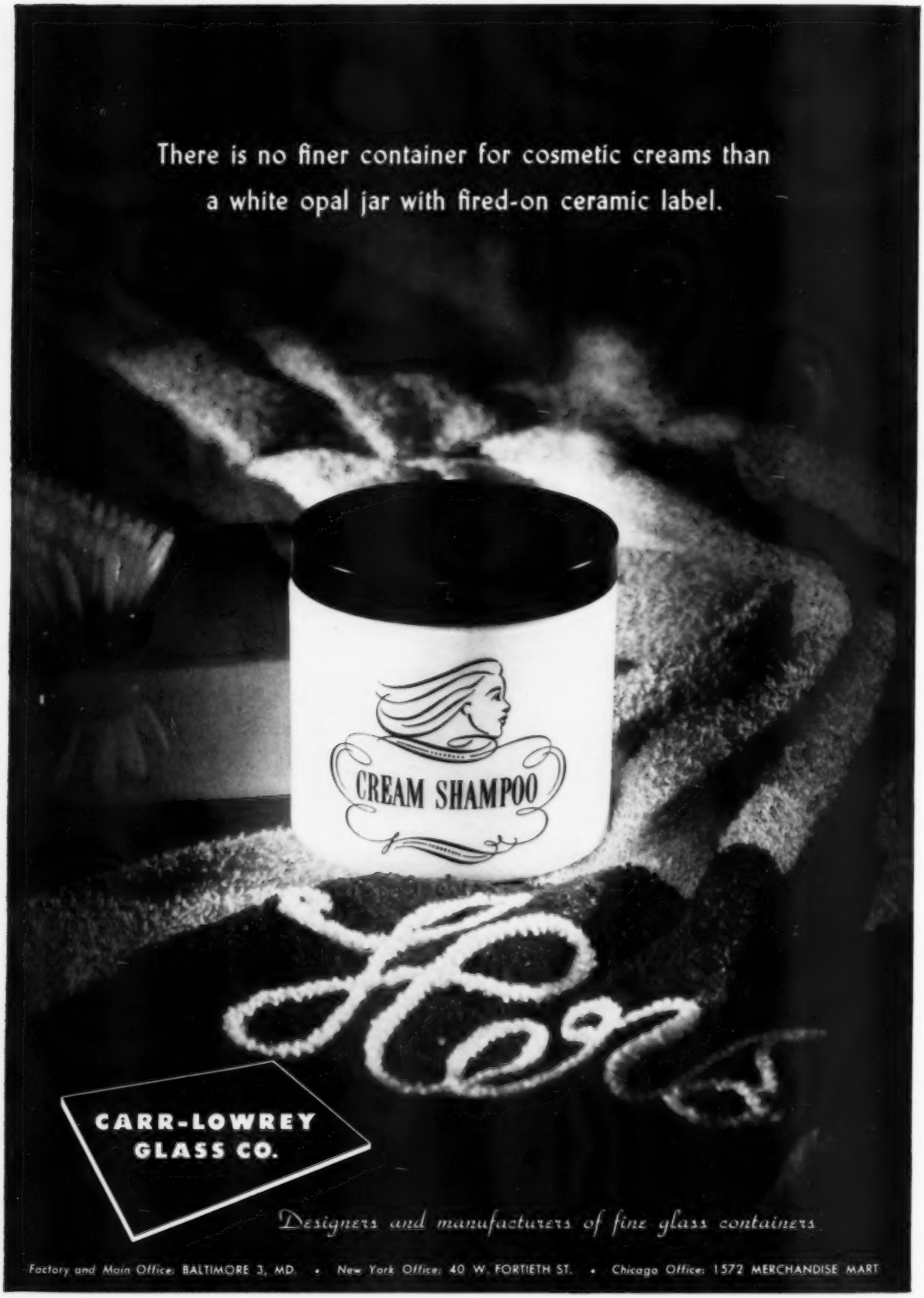
New Deodorant Applicator

There are three principal ways in which a cosmetic success has been made in the past. One way is with the introduction of a new product sufficiently different or interesting to command trade and consumer attention. The second way is with a package which establishes a theme that intrigues the public. The third way is with an applicator that adds a recognizable plus in product protection or in consumer convenience.

Deodorants have probably led all other cosmetic products in stimulating interesting and unique methods of application.

With the introduction of Ban, a new deodorant with a new method of application, Bristol-Myers puts on the market a new product packaged in what is said to be the first tool-engineered designed applicator in the cosmetic field. This applicator is the result of three and one-half years laboratory research in the Hillside, New Jersey plant of the company.

A revolving plastic marble permits a permanently free flow of the lotion-deodorant when the applicator is rolled over the skin surfaces. The plastic marble rolls easily, covering the entire under arm area with the


There is no finer container for cosmetic creams than
a white opal jar with fired-on ceramic label.
CREAM SHAMPOO
CARR-LOWREY
GLASS CO.
Designers and manufacturers of fine glass containers
Factory and Main Office: BALTIMORE 3, MD. • New York Office: 40 W. FORTIETH ST. • Chicago Office: 1572 MERCHANDISE MART

lotion. Ban is packaged in a cylindrical glass bottle with a plastic screw type cap. A gold lettered black label identifying Ban appeals to both men and women. A market test has been conducted for Ban in Johnston, Pennsylvania, Jacksonville, Florida, Toledo, Ohio and Madison, Wisconsin. The initial introduction, backed by newspaper advertising and TV spot announcement brought satisfactory results. Bristol-Myers expects department store, drug store, food and variety store distribution by March 15.

Iridescent Package?

A carpet which glows in the dark would seem to offer all sorts of intriguing possibilities. When the lights are turned out the design on this carpet glows brightly and all the figures are plainly visible. The secret of this new carpet, developed by the Firth Carpet Co., is a yarn impregnated with a solution of phosphorescent chemicals. We once had an iridescent lipstick. Probably there have been other suggestive uses of iridescent colors in our industry. We haven't yet heard of the phosphorescent container for that headache tablet in the medicine cabinet or for whatever might be appropriate among the containers on the boudoir table.

Abundance

This is a quote from Secretary Ezra Taft Benson with particular reference to a farm problem. It seems to us to apply particularly well to industry.
"People who learn to create abundance surely can learn also to distribute it."

Essence of Garlic

There is a rumor around the trade that New Yorkers will consume more garlic oil than all the rest of the world put together. This sudden ascendancy over our Italian friends is not, however, arising from a sudden craving for this condiment. Ever since natural gas came into the city there has been quite a lot of agitation because natural gas is completely odorless and therefore difficult to detect in a leak. It all came about when a riot developed in the Bronx and the Public Service Commission got after Consolidated Edison to make natural gas safer. According to a Consolidated Edison official, "We are giving it to them this week. A nice smell—it is something like, well, something like old, rotting onions." We have a trade tip that it is really garlic oil. So next time you visit the Bronx, don't look out of the corner of your eye at your hostess."

Things to Come

According to a recent issue of "Look," the food industry will be out in front with a lot of new things. One is a special dehydrated steak wrapped in a plastic film which can be preserved for years and will not require refrigeration. A few other new things, from which you could take your pick, are Abalone Chowder and Cactus Sprays.
The only thing of immediate interest to this trade is an edible shampoo. This is a sugar base detergent which is edible in case a child happens to swallow some. Just to make it more interesting for children, Clapp's Baby Foods is bringing out a new packaged fruit juice processed from a mixture of oranges and apples and lacking the high acidity of single-strength juices. This ought to result in further research, and undoubtedly in 1955, the invention of a new cocktail.

Rounded Stocks Best

Minimum stocks are not good retailing, in the opinion of one leading expert. According to this man, adequate stocks tend to build customer good-will and are easy on the nerves of a store sales force. In addition, there will probably be less loss in dollars and profits from inventory losses resulting from rounded stocks than from losses sustained because customers become dissatisfied when items are not available.

Advancing Paper Boxes

The paperboard box industry has nothing to fear from the competition of flexible and rigid plastics, metal foils and other materials, according to Alan Berni, President of Alan Berni and Associates. The potentials for new applications of the paperboard package have been expanding with the great advances in fabrication, the strides in gravure printing, offset lithography, embossing and the lamination of materials as well as vast improvements in the various paperboards themselves.

Package Odors

Every once in a while somebody in this trade has an unpleasant experience because of the odor which develops in a box or carton which has been standing around for too long a time. This is a problem that is pretty well under control by the box and paper manufacturers since the odor is caused primarily because of contamination of the water used in paper manufacture, through certain micro-organisms which are present in the wood pulp or through other contaminated raw materials.

Big Gift Business

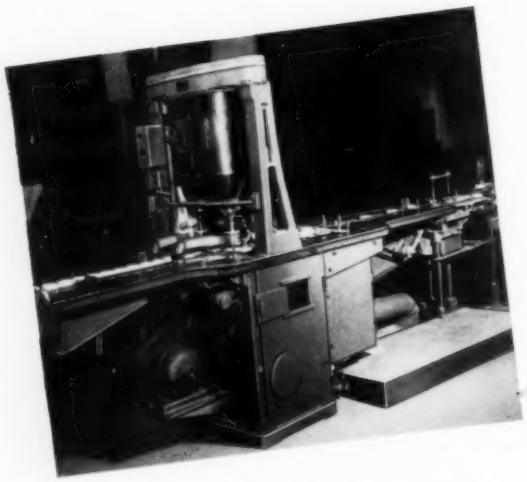
The nation's $900,000,000 giftwear business will hit the billion-dollar mark in 1955, it was predicted today by Charles Snitow, President of the United States International Gift and Fancy Goods Show.

The Brand Underground

The underground in perfume, which we discussed in a recent issue, is appearing in other fields. Apparently, any branded product where it is possible to establish a retail price in the higher brackets is fair game for this type of operator. Now it is the turn of the watch industry. The Better Business Bureau warns that New York and other metropolitan areas are being flooded with cheap imitations of nationally advertised watches which are being peddled as the real thing. As with perfume, these phoney watches are being sold house to house and particularly in factories. This type of peddling must be about the last step, starting with the discount house, in deflating excessive selling costs.

Always a CLEAN ACCURATE fill

WITH STOKES & SMITH MODERN FILLING MACHINES



View of the S & S HG-84 Automatic Heavy Duty Duplex Filler at Avon Products, Incorporated, *Suffern New York*

Whatever your product, profits begin with accurate filling. You can maintain this vital accuracy in your operations with S & S Filling equipment. There is an S & S Filler for most every product; paste, granular substance or powder. Prompt attention will be given to your request for complete information.

STOKES & SMITH CO.

4912 SUMMERDALE AVE., PHILADELPHIA 24, PA.

Pacific Coast: SIMPLEX PACKAGING MACHINERY INC., 534 23rd AVE., OAKLAND 6, CALIF.

fmc

SUBSIDIARY OF FOOD MACHINERY AND CHEMICAL CORPORATION

TRADE MARK

Alexandra de Markoff has a new lightweight, nonspillable Pressed Powder Compact.

Ayerst Laboratories has released Colprosterone (vaginal progesterone), which combines effectiveness and convenience of administration for greater patient acceptability. A specially formulated base insures maximum absorption and utilization.

Bristol Laboratories Inc. has released a new dosage form of Polycycline (Bristol's brand of tetracycline), called Polycycline Intramuscular. It is supplied in single-dose vials of 100 mg. tetracycline hydrochloride and two per cent procaine hydrochloride buffered with ascorbic acid and magnesium chloride.

Bristol-Myers Co. is combining a bonus offer with a powerful point-of-sale promotion and display stand to introduce its new grooming discovery in Vitalis Hair Tonic. Designed and manufactured by Hinde & Dauch, many of these Selmor displays have been distributed to the grocery and drug trade. The front panel illustrates Ipana products, while the side panel reminds shoppers of the Vitalis "60-second workout."

Gourielli has introduced Hair Stick, a brass-encased stick of color which, with a few strokes, blends grey hair into the natural color of the rest of the head. It will wash out easily with shampooing but will not rub off between shampoos. It does not interfere with application of a hair groom afterwards, nor will the groomer remove or smudge Hair Stick.

Flint, Eaton & Co. has released Ferrolip Plus, a liquid hematinic combining chelated iron, liver and B vitamins.

Irwin, Neisler & Co. has an oral drug, Unitensen Tablets, which has been successful in treating moderate and severe high blood pressure. Each Unitensen Tablet contains 2 mg. of cryptenamine, a newly isolated alkaloid fraction of Veratrum viride, obtained by an exclusive Irwin-Neisler nonaqueous extraction process.

Lederle Laboratories Division, American Cyanamid Co., is now selling Aureomycin Chlortetracycline Powder, a fine, easily dispersible preparation, packaged in a plastic squeeze bottle. It is for veterinary use in the treatment of pink eye and superficial skin wounds.

Lerner Plastics, Inc. has adopted a corrugated shipping box for shipping plastic capsule vials. Designed by Hinde & Dauch, the new box features a telescoping top printed in red and black with the product description and trade-mark.

Peck's Products Co. has announced that all of its Pepco antiseptic hand cleansers are now manufactured with Actamer, new bacteriostat for soap developed by Monsanto Chemical Co. for the positive control of dermatitis.

Chas. Pfizer & Co. has two new prescription specialties:

Tyzine Spray Bottle, for the treatment of rhinitis associated with the common cold, hay fever, sinusitis and nasopharyngitis.

Enterobiotic Tablets, for the preoperative antisepsis of the gastrointestinal tract. The combination of Terramycin hydrochloride and neomycin sulphate provides activity effective against the usual intestinal flora.

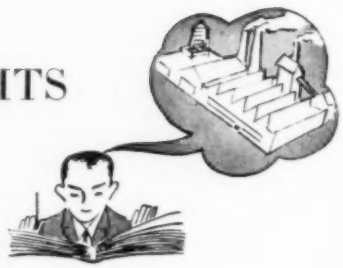
J. B. Roerig Co., division of Chas. Pfizer & Co., has introduced a new package line of nutritional products, including 30 - capsule bottles of Roerig's established vitamin-mineral supplements, as well as the new one-a-day Roetinic anti-anemia preparation.

G. D. Searle & Co. has released Mictine, an oral diuretic for patients with mild congestive heart failure for controlling edema.

Patent THOUGHTS AND TRENDS

*by Thomas Cifelli, Jr.**

PATENT ATTORNEY



Tetracycline U. S. Patent Issued to Pfizer

On January 11, 1955 the U. S. Patent Office issued U. S. Patent 2,699,054 to Lloyd H. Conover. The patent covers tetracycline, salts of tetracycline, and antibiotic compositions containing tetracycline and its salts, as well as a process for the preparation of tetracycline from chlortetracycline.

Issuance of this patent puts to rest a rather unusual newspaper battle involving some well-known American Drug Companies on the question of who, if anybody, was going to receive a patent on tetracycline.

At the same time, if press reports concerning licenses exchanged by some of the drug companies are to be believed, it now appears that American Cyanamid is in the comfortable position of having a hand in the tetracycline patent rights without being involved in any present or contemplated patent litigation; but Pfizer seems to be aligned against Bristol Laboratories, Squibb and Upjohn in a patent infringement suit instituted by Pfizer in Atlanta, Georgia.

Perhaps a brief review of the chronological development of the facts will facilitate an understanding of the patent situation.

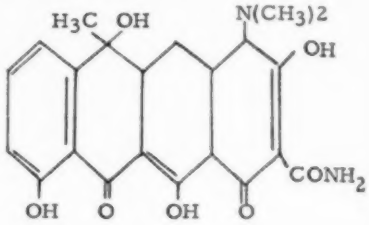
Having in mind that the tetracycline is prepared, according to published information, from chlortetracycline and that American Cyanamid controls the patent on chlortetracycline (which American Cyanamid markets under the name Aureomycin, U.S.P. 2482055) Cyanamid was in the driver's seat patentwise until January 11, 1955. Cynamid felt that Bristol's process of making tetracycline involved going through the chlortetracycline step, it brought suit under U.S.P. 2482055, issued to Duggar, in Syracuse, N. Y. It should be noted at this point that if Cyanamid were correct, Bristol Laboratories would be liable even though it did not market the chlortetracycline. This is so because a patent owner is protected against any commercial use of the patented subject matter. Squibb and Upjohn come into the picture inasmuch as they market the Bristol tetracycline.

The Cyanamid-Bristol suit was settled by Bristol taking out a world-wide non-exclusive license under Cyanamid's patent rights, according to press dispatches. Thus, American Cyanamid and the Bristol-Squibb-Upjohn group seem to have made their peace. The issuance of the Conover patent (assigned to Pfizer according to reports) merely shifted the legal controversy over to the tetracycline patent owned by Pfizer in place of the chlortetracycline patent owned by Cyanamid. As matters stand at present, therefore, the patent battle is being fought between Pfizer on the one hand and Bristol-Squibb-Upjohn on the other, over tetracycline itself.

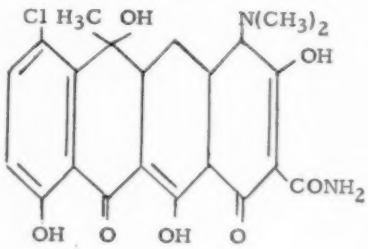
American Cyanamid, in the meantime, is in the rather enviable position of owning the chlortetracycline patent and presumably having a license under Pfizer's tetracycline patent. Those familiar with patent practice, particularly in the drug field, will understand the mechanics by which American Cyanamid obtained a license under the Pfizer patent. Cyanamid and Pfizer were engaged in a Patent Office Interference in order to determine which would obtain the patent. As is quite customary in such proceedings the parties agreed in advance that whoever obtained the patent would grant a license to the loser. The press does not give any details concerning the terms of the license but such licenses usually provide that they are non-transferable and royalty-free.

So much for the legal situation. A close look now will be given to the technical situation.

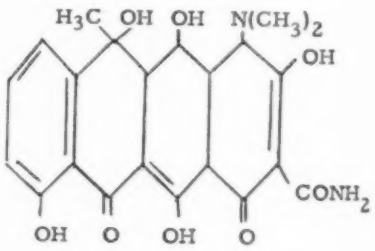
Perhaps the quickest way to appreciate the relationship existing among these antibiotics is to take a look at the structural formulae, which are reproduced below along with the patent numbers and principal trade-marks associated with the materials.



Tetracycline (U.S.P. 2699054)



Aureomycin (U.S.P. 2482055)



Terramycin (U.S.P. 2516080)

It will be observed that Aureomycin has a chlorine not possessed by tetracycline and Terramycin has an additional OH not possessed by tetracycline.

Claimed Advantages of Tetracycline

Though press reports indicate that tetracycline possesses certain advantages over previously known antibiotics, the patent does not make any specific claim along this line. Indeed, the only

*Richards and Cifelli
Newark, New Jersey

THE *Aerosol Valve* FOR YOUR PRODUCT *by Precision*

NOW... Precision's same high quality, time-tested aerosol value is being manufactured in England, France, Germany, Italy and Brazil. The availibility of the Precision Valve throughout the world now permits your foreign sales to enjoy the same aerosol growth and success that has been experienced in this country. So wide-spread has been the public acceptance and demand for self-dispensing packages, that new type products and additional brands are added daily to the long list. Now is the time for you to investigate this market.

Why is Precision the Leader?

DESIGN . . . The wide range of Precision Valves featuring postive, fingertip operation assures a successful solution to your specific spray requirements.

CONTAINER . . . Precision has a valve engineered for the aerosol container of your choice plus the widest selection of plastic colors to enhance the beauty of your package.

PRODUCT... Plastic construction eliminates corrosion enabling Precision Valves to perform efficiently for all products whether foam, residual or true aerosol.

FILLING METHOD . . . All types of aerosol products with Precision Valves, are being filled successfully by pressure as well as refrigeration at the lowest possible cost.

QUALITY . . . Precision's basic research, production skill, development techniques, 100% inspection of every valve *plus* the background of over 150,000,000 time-tested valves is your assurance of quality.

ECONOMY . . . The highest plant production efficiency, as well as the lowest rejection rates for filled containers, assures maximum economy with Precision Valves.

AVAILABILITY . . . The world's largest aerosol valve manufacturing facilities, are combined with the lastest production methods and techniques, to give prompt production and delivery schedules.

● *We invite your inquiry to enable our staff of aerosol valve technicians to work cooperatively in satisfying your valve requirements.*

PRECISION

Precision Valve Corporation

700 NEPPERHAN AVENUE • YONKERS 3, NEW YORK

There's a PLAX Package with the ideal DISPENSING method for your product

You specify the action . . . fine, medium or coarse . . . spray . . . drop-by-drop . . . pressure or controlled pouring . . . direct application. In a Plax package, your product is dispensed exactly as it should be for maximum use convenience. More than 50 stock fitments to choose from. PLUS rainbow colors . . . lighter shipping weights that can save you hundreds of thousands of dollars . . . and the custom or stock shape that gives your product stand-out eye appeal. For packaging that makes your product easier to use, consult Plax.

PLAX CORPORATION

P. O. Box 1019, HARTFORD, CONNECTICUT

IN CANADA: Plax Canada, Ltd., Montreal and Toronto

PLAX

In plastic bottle packaging, only Plax offers continuous research, complete design service, and long experience.

statement in the patent comparing it to any of the previously known antibiotics is the following:

"The new compound produced is microbiologically active and possesses certain advantages as an antimicrobial agent when compared to the parent chlortetracycline compound, e. g. it is more stable in aqueous preparations particularly at slightly basic pH's."

The patent does however give data showing the activity in vitro of tetracycline as measured quantitatively by means of a serial dilution procedure widely employed in testing antibiotics. These data are given in the following table taken from the patent.

Activity in vitro of tetracycline

Species	Minimum Inhibitory Concentration (mcg./ml.)
Aerobacter aerogenes	50.0
Klebsiella pneumoniae	12.5
Escherichia coli	1.56
Sal monelle typhosa	0.78
S. paralyphi	0.78
Staphylococcus aureus	0.19
Proteus sp.	50.0
Pseudomonas sp.	12.5
Brucella bronchiseplicae	0.39
Mycobacterium ranae	0.19
Streptococcus faecalis	0.19

In addition the patent mentions that tetracycline may be used in sterilization to remove susceptible micro-organisms from pharmaceutical equipment of various types or to separate certain species from solution containing mixtures of various types of micro - organisms. Tetracycline is also said to possess utility in the treatment of animals infected with certain organisms which are sensitive to the action of the material; in particular, those which belong to the gland-positive group of micro-organisms.

Preparation of Tetracycline

The process starts with chlortetracycline which is contacted in an organic solution with hydrogen in the presence of palladium catalyst. While the reaction may be conducted under atmospheric pressure, pressures up to about 200 p. s. i. are said to be suitable, pressures from five to 50 p. s. i. apparently being preferred. The reaction is a low temperature one, room temperature being sufficient and elevated temperatures up to about 50° C. being suggested. A concentration of catalyst amounting to at least five per cent by weight of the antibiotic used is said to be necessary. Other catalysts such as platinum or Raney nickel are said to be not as generally useful as palladium catalysts. Reaction times given are from one to about 12 hours, depending upon the other conditions.

A specific example, taken from the patent for the preparation of tetracycline is given below:

Pure chlortetracycline (4.8 grams) was suspended in 100 milliliters of methanol and sufficient anhydrous dioxane was added to completely dissolve the product. To the solution was added 0.5 gram of five per cent palladium-on-charcoal catalyst. The mixture was placed in a conventional hydrogenation apparatus and subjected to a pressure of 50 p. s. i. of hydrogen while being agitated. After the initial drop in pressure due to the absorption of gas by the catalyst and the solvent, there was a steady drop in pressure due to the hydrogenation of the antibiotic. After approximately one mole of hydrogen had been absorbed, no further reaction was observed. This occurred after about two hours. The catalyst was filtered and washed with boiling methanol and boiling dioxane. The solution gave a positive test for chloride ion when treated with silver nitrate solution. It also possessed a strongly acidic reaction demonstrating the release of the nonionic chlorine in the form of hydrogen chloride. A bioassay of the crude product in solution indicated a potency of approximately 580 mcg./mg. with oxytetracycline as the standard at a potency of 1,000 mcg./mg. The solution was concentrated under vacuum at room temperature and the residual liquid was dried from the frozen state under vacuum. 3.1 gm. of bright yellow amorphous tetracycline hydrochloride was obtained.

This product was converted to tetracycline per se by redissolving it in water, carefully neutralizing it to pH 4.5 with dilute sodium hydroxide, and recovering the product by drying the solution.

The crystalline amphoteric compound was prepared by extracting the aqueous solution of the base, prepared as above, with butanol (other solvents such as ether may also be used) and concentrating the solvent extracts to a small volume. The crystalline product was recrystallized from toluene to obtain material of analytical purity, the analyses and physical constants of which are given below: This material has been found to melt at 170-175° C. with decomposition. This product has an optical rotation of $[\alpha]_D^{25} = -239°$ when dissolved in methanol at a concentration of one per cent. On titration in 50 per cent aqueous dimethylformamide two acid constants were observed, pk_a 8.3, 10.2. The crystalline product was analyzed and found to contain: C, 59.35 per cent; H, 5.41 per cent; N, 6.15 per cent. The analyses calculated for $C_{22}H_{24}N_2O_8$: C, 59.45 per cent; H, 5.44 per cent; N, 6.31 per cent. The equivalent weight by titration was found to be 227. The calculated molecular weight is 444. Ultraviolet absorption maxima occur at about 270 and 362 mμ when the material is dissolved in methanol 0.01 N in hydrogen chloride. In methanolic solution 0.01 N in sodium hydroxide absorption maxima occur at 245, 265 and 382 mμ.

Claims

The patent contains 18 claims covering tetracycline, the mineral acid salts of tetracycline, the alkali metal salts of tetracycline and the alkaline earth metal salts of tetracycline; a process for preparing tetracycline from chlortetracycline; and antibiotic compositions containing tetracycline and its derivatives.

Reference Cited in the Tetracycline Patent File

It may be of interest to some to know what references were cited against the Conover patent application and for this reason they are listed below as taken from the patent:

UNITED STATES PATENTS

2,482,055 Duggar . . . . . Sept. 13, 1949
2,516,080 Sobin et al. . . July 18, 1950
2,609,329 Niedercorn . . Sept. 2, 1952

OTHER REFERENCES

Stephens et al., "J. Am. Chem. Soc.," vol. 74, Oct. 5, 1952, pp. 4976 and 4977.

RECENT PATENTS

2,685,579—**Am. Sugar Refining Co.—Fractionation of Dextrans with Alkaline Earth Hydroxides.**

2,685,580—**Hoffmann-La Roche—1-Isonicotinyl-2-Aldosylhydrazine.**

2,685,584—**Hoffmann-La Roche — Prepn. of Nicotinaldehyde Thiosemicarbazone HCl.**

2,685,585—**Hoffmann-La Roche — 1-Isonicotinyl - 2 - Alkyl - Hydrazines.**

2,685,589—**Wm. S. Merrell—Substituted Thiophene Therapeutics.**

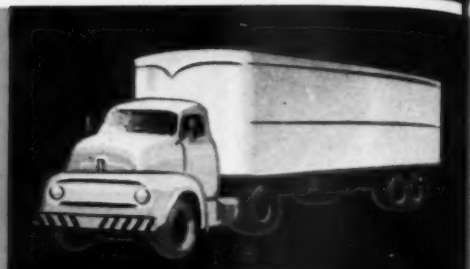
2,685,594—**Sterling Drug—Mercury Compounds of 2-(N-Allylcarbamyl)-Phenoxyacetic Acid.**

2,686,144—**F. G - B Fonsdeviela (Spain)—Helicidine from Molluscs.**

Heyden Salicylic Acid

by the truckload...

by the drum...



in the right form

to fit your needs...

U.S.P. CRYSTALS

A product of extremely high purity. Valued as an intermediate for the manufacture of aspirin and salicylates.

U.S.P. POWDER

Used in dusting powders, lotions and ointments for its antiseptic, fungicidal and keratolytic properties.

TECHNICAL CRYSTALS

An exceptionally pure technical sublimed product used in rubber and as a chemical intermediate for dyes and essential oils.

H POWDER

An economical unsublimed grade suitable for use in organic syntheses, rubber, and other technical applications.

We shall be happy to consult with you on your Salicylic Acid needs.

Heyden Salicylates

SODIUM SALICYLATE U.S.P.
Crystals or Powder

POTASSIUM SALICYLATE
Powder

METHYL SALICYLATE U.S.P.

PHENYL SALICYLATE N.F.
Granular (SALOL)

ACETYLSALICYLIC ACID U.S.P.
Crystals or Powder
(also Starch Granulations)

FINE HEYDEN CHEMICALS

HEYDEN CHEMICAL CORPORATION

342 Madison Avenue, New York 17, N.Y.

CHICAGO • CINCINNATI • DETROIT • PHILADELPHIA • PROVIDENCE • SAN FRANCISCO

Benzaldehyde • Benzoic Acids • Benzyl Chloride • Beta-Oxynaphthoic Acid • Chlorotoluenes • Creosotes • Formaldehyde • Formic Acid • Guaiacols
Parahydroxybenzoates • Pentaerythritols • Propyl Gallate • Resorcinol • Salicylates • Salicylic Acid • Sodium Benzoate

NEWS...

Milton A. Lesser

Milton A. Lesser, Technical Editor of Drug and Cosmetic Industry, died at his home, 65 Ocean Avenue, Brooklyn, N. Y., on January 31 after a long illness. Mr. Lesser, who was 47 years old, was associated with Drug and Cosmetic Industry for eighteen years. In 1937, he contributed his first article to this magazine, and from then on was a regular contributor. In 1943, he joined the staff of the magazine as Technical Editor, a position he held until his death.

He was a consultant to the Association of American Soap and Glycerine Producers and belonged to the New York Academy of Science, the American Chemical Society, the American Pharmaceutical Association and the American Association for the Advancement of Science.

Mr. Lesser was unique in his field. He could write an article on almost any subject that would be so authoritative and complete that even people intimately associated with the subject could add nothing to it, and quite often they could learn things from it. In other words, he could write on any subject as a specialist in that subject, and he could do it in a comparatively short space of time.

Further than this, Mr. Lesser was extremely modest regarding his accomplishments, and was one of the most thoughtful persons who ever lived. He had a minute or more for everyone with whom he came in contact in any way. Coming in the office early in the morning, he would visit for a few minutes with everyone in the office, offering words of cheer and lending a sympathetic ear to anyone's problems. He was sincerely loved by all who came to know him.

Mr. Lesser is survived by his widow, Rose; two children, Paul and Martha; and two sisters, Mrs. Helen Miller and Mrs. Sarah Galpern.

Hazel-Atlas Appointments

E. L. Casey has been appointed regional sales manager, Pacific Coast, of Hazel-Atlas Glass Co., succeeding Fred L. Bower who is retiring from active employment. He has been assistant sales manager for that region.

Matt. J. Olds, formerly district sales manager at the company's Seattle sales office, has been appointed assistant regional sales manager, Pacific Coast.

Std. Pharmacal Expands

Standard Pharmacal Co., Chicago, has approximately doubled its floor space. Its previous production of tablets and hard-shell capsules has now been more than doubled, with newly installed equipment.

New Hazel-Atlas Sales Office

Hazel-Atlas Glass Co. has opened a new district sales office in the Johnston Building at Charlotte, N. C.

Cecil W. Fulkerson, formerly sales representative of the Baltimore sales office, has been named district sales manager of this office.

Receives Florasynth Award

Eliot Friberg, West Coast sales manager for Florasynth Laboratories, recently presented the Florasynth Fellowship Award to John E. Schade, of the University of California for outstanding research work in the field of food technology. The presentation took place at the Institute of Food Technologists meeting at Davis, California.

Gibson, Gen. Counsel of J&J

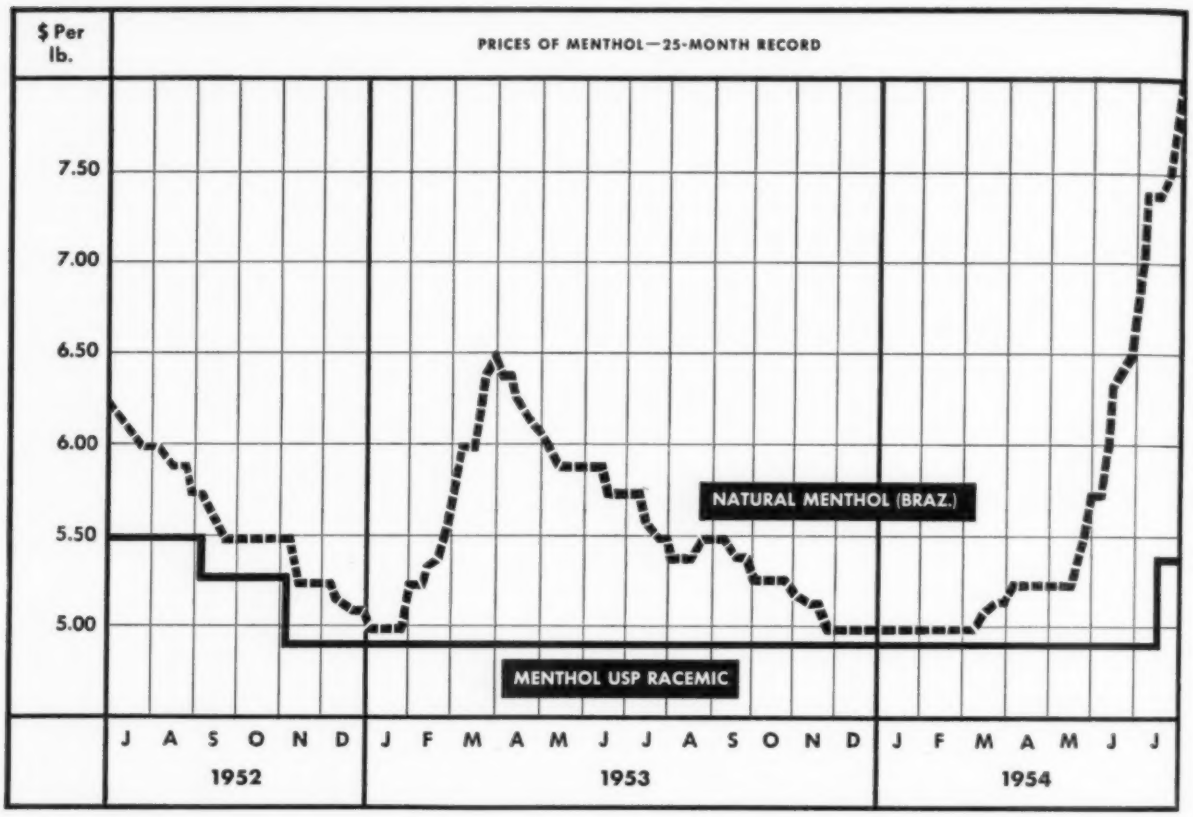
John J. Gibson has been appointed general counsel of Johnson & Johnson, succeeding Kenneth Perry who continues as vice-president and special counsel. He has been corporate secretary since 1942 and a director since 1947.

Baker Appoints Kleppinger

C. T. Kleppinger has been appointed technical assistant to the vice-president in charge of sales, J. T. Baker Chemical Co. He was formerly director of the Central Control Laboratories at Baker and chairman of the standards committee. He will be responsible for technical service and commercial development.

Givaudan Menthol USP Racemic

- *Stably priced far below Natural and Synthetic Laevo Menthols*
- *Consistently your best buy!*



The above graph shows the remarkably firm, dependable – and low – price levels of Givaudan Menthol USP Racemic during the past two years – a striking contrast to the erratic course of Natural Menthol, now climbing to an all-time high!

In other respects as well, Givaudan Menthol USP Racemic offers exceptional advantages because

... its quality is uniformly high

... it is in ample supply domestically – no danger of shortages or import difficulties

... it has been proved in over ten years of successful use in pharmaceutical products – while priced substantially below both the Natural and Synthetic Laevo Menthols

So specify Givaudan Menthol USP Racemic. You will benefit from savings in cost... and from the consistent high quality which distinguishes every Givaudan product.

Leaders in Aromatic Chemical Research

GIVAUDAN - DELAWANNA, INC.
330 West 42nd Street · New York 36, N.Y.

Branches: Philadelphia · Boston · Cincinnati · Detroit
Chicago · Atlanta · Seattle · Los Angeles · Toronto

MARSHAL N. de NOYELLES

DR. HANS SCHINZ

CHARLES W. NICHOLSON

de Noyelles Retires, Pfizer

Marshal N. de Noyelles, general manager of the chemical sales division, Chas. Pfizer & Co., Inc., retired December 31. He had been with the company for 38 years. He started as a clerk in the purchasing department, becoming a Pfizer sales representative after serving in the Army during World War I. Mr. de Noyelles later became eastern regional manager, national field sales manager and assistant sales manager. On July 1, 1953, he was advanced to divisional general manager.

He was recently honored by his Pfizer associates at a farewell banquet at the Westchester Country Club, at which time he was presented with a combination ship's clock and barometer as a memento of the occasion.

Bigelow Retires, Amer. Cyan.

Dr. Carle M. Bigelow, formerly director of the pharmaceutical department of the Calco division of American Cyanamid Co., and recently assistant to the general manager of the fine chemicals division, retired January 1. He will remain as a part-time consultant for some time, with his office at Bound Brook, N. J.

Founders' Medal to Fonda

Howard B. Fonda, senior vice-president of Burroughs Wellcome & Co. (U.S.A.) Inc. received the Founders' Medal at the Honors Night Banquet of the Association of Military Surgeons of the United States on December 1. Held at the Hotel Statler, Washington, D.C., the presentation of the medal was made by Major General George E. Armstrong, Surgeon General of the Army. He said that in awarding the medal to Mr. Fonda, the Association was also recognizing the innumerable contributions of the industry of America in solving medical problems as well as its support of medical preparedness for national defense.

Fritzsche Award to Schinz

The American Chemical Society has conferred its Gold Medal and the Fritzsche Award for 1955 on Dr. Hans Schinz, Firmenich & Cie., Geneva, for his research and discoveries in the field of essential oils and aromatics. Dr. Schinz is the second Swiss chemist, and the third collaborator of Firmenich, to receive the award. Dr. E. Lederer was the recipient in 1951 and Dr. M. Stoll, in 1953.

Dr. Schinz will receive the award on March 29.

Witco Buys Interest in Ultra

Witco Chemical Co. has acquired a one-half interest in Ultra Chemical Works, Inc., a large producer of synthetic detergents, waxes and chemical specialties for industrial and household use. The officers and management of Ultra will continue as before.

Internat. Div. for Stokes

F. J. Stokes Machine Co. has established a new International Division at the company's headquarters, 5500 Tabor Road, Philadelphia, which will control and administer all overseas sales activities.

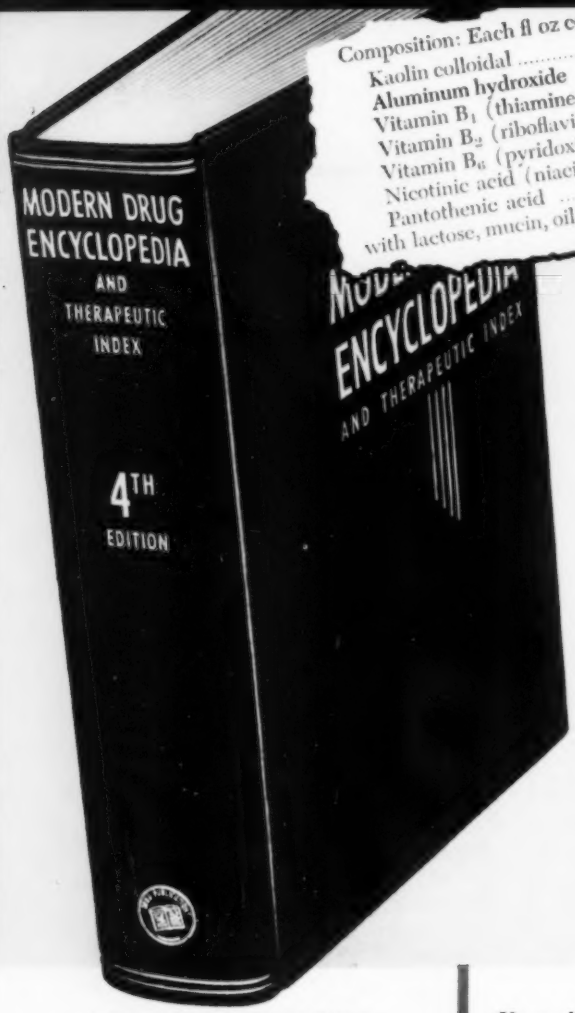
The division will be directed by Charles W. Nicholson who recently joined Stokes as export production manager.

This new division will enable the company to establish closer control over, and better relations with, the local representatives throughout the world, giving better service to its overseas customers.

Elected by Ames Co.

Howard F. Christner has been elected secretary and Charles R. Ver Berkmoes, treasurer, of Ames Co., Inc., according to Charles F. Miles, president.

Howard B. Fonda (left), senior vice-president, Burroughs Wellcome & Co. (U.S.A.), receiving Founders' Medal from Major Gen. George E. Armstrong, Surgeon General of Army, on behalf of Ass'n. of Military Surgeons of U. S. Surgeon Gen. Leonard R. Scheele, M.D., USPHS, president of Ass'n., is seated. Presentation took place Dec. 1 at Honors Night Banquet, Washington, D. C. The Founders' Medal is awarded yearly to those members who have rendered a valuable service to the Ass'n. as determined by its executive council. The Ass'n. of Military Surgeons of the United States was organized in 1891 and incorporated in 1903 by an Act of Congress.



Composition: Each fl oz contains:
Kaolin colloidal ..... 6.45 Gm (gr 100)
Aluminum hydroxide ..... 0.778 Gm (gr 12)
Vitamin B_1 (thiamine hydrochloride) ..... 0.3 mg (100 U.S.P. units)
Vitamin B_2 (riboflavin) ..... 0.02 mg
Vitamin B_6 (pyridoxine) ..... 0.3 mg
Nicotinic acid (niacin) ..... 4.0 mg
Pantothenic acid ..... 0.55 mg
with lactose, mucin, oil of peppermint.

Description: A colloidal cream of 6.5% **aluminum hydroxide**, with magnesium trisilicate 0.486 Gm (gr 7½) in each 4 cc teaspoonful; flavored with peppermint.

Description: A palatable, mint-flavored colloidal suspension of **aluminum hydroxide**, free from sugar or alkalies.

Composition: Each teaspoonful of liquid contains (approximately) magnesium trisilicate 0.5 Gm (gr 1½); **aluminum hydroxide** 0.449 Gm (gr 6.9). (or 6.825 Gm (gr 105) aluminum hydroxide gel).

Composition: Each fl oz contains magnesium trisilicate 3.89 Gm (gr 60) and **aluminum hydroxide** 1.94 Gm (gr 30).

NOW...

Baker offers you high purity ALUMINUM HYDROXIDE Wet Gel Concentrate

***SPECIFICATIONS**

Test	*Baker*
Assay (as Al_2O_3)	10.0–13.0%
Description	To Pass Test
Identification	To Pass Test
Reaction	To Pass Test
Acid-Consuming Capacity (cc N/10 HCl/gm 10% Al_2O_3)	53.0 Min.
Chloride (Cl)	0.28%
Sulfate (SO_4)	0.05%
Arsenic (as As_2O_3)	0.00008%
Heavy Metals (as Pb)	0.0005%

**Based on relevant U.S.P. requirements*

Your pharmaceutical product deserves a superior, high-purity Aluminum Hydroxide Wet Gel—one that will protect your formulas and trademark.

Now, Baker is proud to provide you a dependable source for this product. You will immediately recognize the high purity of Baker concentrated Wet Gel, because even the undiluted concentrate meets relevant U.S.P. tests for the diluted Gel.

This outstanding quality is the direct result of the Baker methods for precise manufacturing control. This step by step supervision results in a gel with the reaction speed and high acid-consuming capacity needed to safeguard the therapeutic efficiency of your product.

This new wet gel is an important companion product to the Aluminum Hydroxide Dried Gel we have provided to leading pharmaceutical manufacturers for years.

Try Baker concentrated wet gel . . . see the job it will do for you in your own formulations, using your own manufacturing techniques. Samples for your evaluation are available upon request. Remember . . . it pays to buy Baker!

J. T. BAKER CHEMICAL CO.
Executive Offices, Phillipsburg, New Jersey

Baker CHEMICAL

Baker Chemicals
REAGENT • FINE • INDUSTRIAL

OTHER IMPORTANT REASONS FOR CHOOSING BAKER CONCENTRATED ALUMINUM HYDROXIDE WET GEL:

Uniform viscosity on dilution
. . . this aids in insuring uniform pouring characteristics for your product.

Chemical assay
. . . each drum of Baker concentrated Wet Gel has the exact assay shown on the label.

Superior suspension properties
. . . when the concentrated Aluminum Hydroxide Wet Gel is diluted, little or no separation upon standing is observed.

Practical, protective packaging
. . . Baker concentrated Wet Gel is packaged in non-returnable steel drums with phenolic baked lining, plus polyethylene liner.

DR. DOUGLAS S. CALDER

HERB KAINIK

DONALD S. FROST

Calder in Mallinckrodt Post

Dr. Douglas S. Calder, formerly with Dominion Tar & Chemical Co., Ltd., has been named vice-president and general manager of Mallinckrodt Chemical Works Ltd., Montreal. He has also been elected to the board of directors.

He will take over active management of Mallinckrodt about June 1. Dudley Batchelor, who has been acting manager of the Canadian firm, will return to a new position in the St. Louis office when Dr. Calder assumes his new duties.

Vick to Buy Hess & Clark

Vick Chemical Co. has signed an agreement to acquire Dr. Hess & Clark, Inc., Ashland, Ohio, a leading producer of pharmaceuticals and feed supplements for the poultry and animal feed industry, according to E. L. Mabry, president.

Dr. Hess & Clark will be operated as a separate division and retain all of its major trade and merchandising policies. The company's headquarters will continue to be in Ashland.

Herman A. High, vice-president and director of Vick Chemical Co., will become president and general manager of Dr. Hess & Clark, succeeding the late H. Marshall Clark. Frank N. Getman, vice-president of the Wm. S. Merrell Co., a vick division, will become executive vice-president. Donald E. Clark, son of one of the founders of the firm, continues as vice-president.

Parke, Davis Promotions

Fred H. Thistlethwaite has been promoted from hospital and biological sales manager to sales coordinator for Parke, Davis & Co., according to Graydon L. Walker, vice-president and director of U. S. sales and promotion. He has been succeeded in his former post by Donald A. Swanson who had previously been assistant manager.

D&O Consulting Service

Dodge & Olcott, Inc., is offering a new perfume consulting service. Herb Kainik, perfumer, will be available to manufacturers as a consultant on any perfuming problems they may encounter, and he will work directly on the premises with the organization's own technical staff.

Mr. Kainik is also a highly qualified specialist in the aerosol field, in which he has been active since its inception.

Gowans Heads Crown Cork

Russell Gowans was elected president of the Crown Cork & Seal Co., Inc., on January 1, according to John J. Nagle, chairman of the board and former president.

Charles E. McManus, Jr., vice-president, has also been elected vice-chairman of the board.

Frost, V.P., Bristol-Myers

Donald S. Frost has been appointed vice-president in charge of advertising of the Bristol-Myers Products division. He had been assistant director of advertising and market research for Bristol-Myers Co. from 1945 to 1950, thereupon going to Compton Advertising as an account executive and vice-president.

In 1954 he rejoined Bristol-Myers products division as director of advertising.

LeBar Promoted by Winthrop

William E. LeBar has been promoted to assistant general sales manager of Winthrop-Stearns Inc., according to Charles B. McDermott, vice-president in charge of sales. He was formerly director of Winthrop's hospital sales division.

New officers of Cosmetic Industry Buyers and Suppliers. Seated, left to right: David J. Warner, Fleuroma, 1st vice-president; Harold N. Anderson, H. Kohnstamm & Co., president; and George A. Kaempkes, Pacquin's, 2nd vice-president. Standing: Robert C. Ring, Hewitt Soap Co., corresponding secretary; Donald McMurray, Helena Rubinstein, recording secretary; Lamson M. Scovill, Scovill Mfg. Co., board of directors; John Duncan, Hazel-Atlas Glass Co., director; William Jaeber, Park & Tilford, treasurer; and William S. Fairhurst, Marva Products, Inc., director.

HUBERT M. COLE

HAROLD E. PLETCHER

LAWRENCE R. GARDNER

Cole with Firmenich

Hubert M. Cole, formerly with General Foods Corp., has been appointed technical director of the flavor division of Firmenich Inc., according to Charles C. Bryan, president. He succeeds W. D. Graham, who has been assigned to the research laboratories of Firmenich & Cie, Geneva, Switzerland.

Richards Appointed by Dache

Don L. Richards has been appointed executive assistant to Lilly Dache, president of General Beauty Products, in the management of three companies within the organization: Marie Earle, Lucien Lelong and Lilly Dache Hair Products.

Kole Heads Kolmar Plant

Dick Kole is now in charge of the Broadway St. plant of Kolmar Laboratories, Milwaukee, where the executive offices are situated, according to Lessing L. Kole. Erv Maruszewski will handle special assignments for the executive vice-president of Kolmar, W. J. Wick.

Fritzsche Expansion

Fritzsche Brothers, Inc., recently acquired 20,000 additional square feet of floor space directly above its New York headquarters in the Port Authority Building. The entire perfume division, with four new laboratories under the general direction of Dr. Ernest Guenther, is efficiently accommodated on the 13th floor.

This expansion has also enabled the twelfth floor facilities to spread out—the firm's flavor division, city sales, credit, export, administration and purchasing departments, and the pharmaceutical flavor research laboratory.

New accommodations have been provided on the 13th floor for the company's advertising and sales promotion departments, print shop and library.

Pletcher Promoted by Penick

Harold E. Pletcher, formerly assistant production manager, has been appointed production manager of all manufacturing operations of S. B. Penick & Co. and tc New York Quinine & Chemical Works. In this way, according to Albert D. Penick, executive vice-president, the management of facilities located in Jersey City, Lyndhurst, Montville and Newark, N. J., will be consolidated.

Mr. Pletcher will make his headquarters at the Lyndhurst plant.

Wiedhopf Retires, Ciro

J. S. Wiedhopf, president of Parfums Ciro since 1939, has retired, ending 47 years in the fragrance field which he entered in 1907. He went into business with Guy T. Gibson in 1921 for the distribution of Caron perfumes, and together they founded Parfums Ciro in 1923 in this country.

Mr. Wiedhopf was one of the founders and the first president of the Fragrance Foundation, of which he remains a life director. He was recently elected honorary member for life of the Perfumery Importers Association.

Gardner, CSC Purchasing Mgr.

Lawrence R. Gardner has been named purchasing manager for Commercial Solvents Corp., according to Howard L. Sanders, vice-president. He will be responsible for the direction of purchasing activity at all of the company's facilities.

Miles to Buy Bischoff

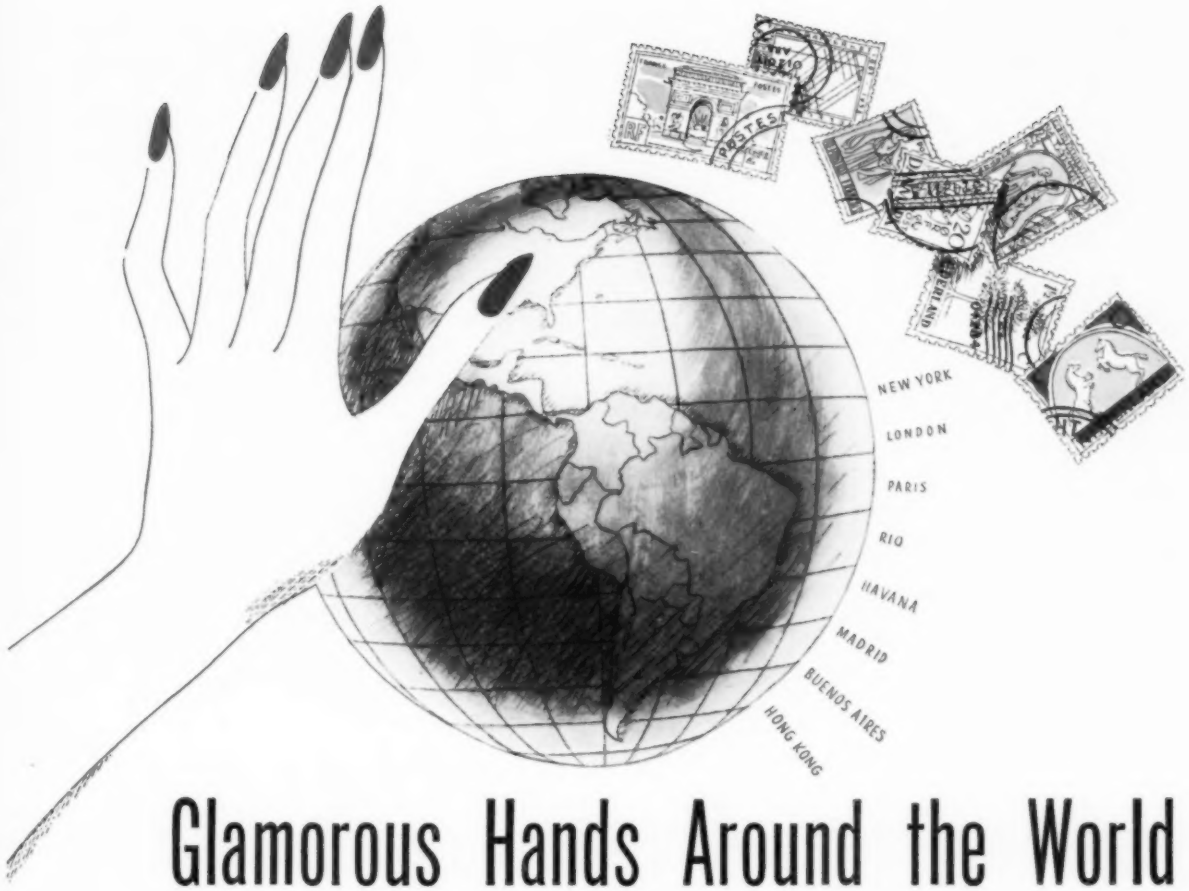
Miles Laboratories, Inc., has completed negotiations for the purchase of the Ernst Bischoff Co. of Ivoryoni, Conn., manufacturers of biologicals and pharmaceuticals for almost 50 years. The Bischoff Co. will be operated and merged with the Ames Co., subsidiary of Miles Laboratories.

An expanded sales and development program is being planned for the Bischoff line, according to Charles F. Miles, president, who stated that the facilities at Ivoryton will be maintained and enlarged.

Son to Wm. Baker

A son, Wm. Burdell Baker, Jr., was born to Mr. and Mrs. Wm. Burdell Baker a few hours before New Year's Eve on December 31, 1954.

Dr. Ernest Guenther, vice-president and technical director of Fritzsche Brothers, showing visiting sales representatives (left to right) Les Joyner, Ian MacInnes and Lloyd Speck of the Canadian office, and Pete Niles, manager of Chicago office, plans for enlarged perfume division and laboratories in company's New York headquarters.



Glamorous Hands Around the World Call For the Foremost Name

DURLIN *for bulk nail enamel*

DURLIN is the Foremost Name in BULK NAIL ENAMEL catering to the leading class packagers the world over. Durlin is first in quality, first in fashion-right colors, first in technical and packaging service.

glamorous hands around the world . . .

DURLIN CO.

744 Broad Street, Newark 2, N. J.

Cable Address: Durlin Newark Newjersey

ATLAS COSMETIC COLORS

Certified in the United States . . . used throughout the world.

Colors with superior solubility, incomparable brilliance, dependable uniformity . . .
no wonder they have been the industry's standard for 103 years.

We produce every color in the spectrum . . . *just* the color
to enhance *your* product with exciting eye and buy appeal.

Our research facilities and staff of color experts are available for creative consultation.

FIRST PRODUCERS OF CERTIFIED COLORS

KOHNSTAMM & COMPANY Inc.

ESTABLISHED 1851

89 PARK PLACE, NEW YORK 7 • 11-13 E. ILLINOIS ST., CHICAGO 11 • 4735 DISTRICT BLVD., LOS ANGELES 11

BRANCHES IN OTHER PRINCIPAL CITIES OF THE U.S.A. AND THROUGHOUT THE WORLD

DR. J. F. MULLER

P. R. LIVSEY

C. MONROE WIEGAND

Muller Promoted by Borden

Dr. J. F. Muller has been named general manager of the prescription products department of the Borden Company's special products department, according to Charles F. Kieser, vice-president in charge of that division. He succeeds Harry McNeilly who has resigned. Dr. Muller was previously assistant general manager, and also research director.

Soc. of Perfumers Elections

The American Society of Perfumers, Inc. held its annual business meeting at the Advertising Club in New York on January 19, during which the following officers were elected: Everett D. Kilmer, Lever Brothers, Inc., as chairman of the board; Ernest Shiftan, van Ameringen-Haebler, Inc., president; Christian F. Wight, van Ameringen-Haebler, vice-president; William H. Barlow, Orbis Products Corp., secretary; and Herbert G. Kainik, Dodge & Olcott, Inc., treasurer.

Maurice A. Meunier, Les Parfums de Dana, Inc., and Theodore Bumiller, Jr., Givaudan-Delawanna, Inc., will each serve as a director for three years.

The following applicants were elected to membership: Selma Weidenfeld, Rhodia, Inc.; Henry G. Gribou and George H. Fuller, Colgate-Palmolive Co.; Henry H. Retaillau, Perfumery Associates, Inc.; Rene H. Bourguet, American Aromatics, Inc.; Leon Hardy and Bernard J. Chan, van Ameringen-Haebler; Gustav Carsch, the Toni Co.; Edward Silkin, Dana Parfums; and Raymond P. Williams, Dodge & Olcott, Inc.

Baer on Lueders Sales Staff

J. W. Baer has been named to the eastern sales staff of George Lueders & Co., according to Frederick Lueders, president.

Essential Oil Assn. Elections

The Essential Oil Association of the U.S.A. held its 27th annual meeting on January 7 at the Savoy Plaza Hotel, New York, with more than 150 executives of the member companies present.

The following officers were re-elected: L. Campert, vice-president of Felton Chemical Co., as president; P. J. Coutin, vice-president; and F. F. Dittrich, comptroller, Ungerer & Co., secretary-treasurer.

Members of the executive committee are: R. A. Engel, vice-president, Trubek Laboratories; George H. McGlynn, vice-president, Magnus, Mabee & Reynard, Inc.; H. P. Wesemann, vice-president, Fritzsche Brothers, Inc.; Waldo Reis, vice-president, van Ameringen-Haebler, Inc.; and Dr. A. L. Fiore, coordinator of service Laboratories, Givaudan-Delawanna, Inc.

Breon Appointments

William J. Briggs has been appointed sales manager of George A. Breon & Co., according to Frederick O. S. Spencer, vice-president in charge of sales. Kenneth B. Fickling has been named assistant to the medical director. Both men, formerly members of the detailing staff, have been assigned to Breon's headquarters in New York.

Avon Exec. Appointments

C. Monroe Wiegan, with Avon Products, Inc., for 25 years, has been appointed vice-president in charge of production, according to John A. Ewald, president. George W. Shine, since 1948 in the merchandising, packaging and advertising divisions, has become advertising manager, and P. R. Livsey has been promoted to director of purchases. Mr. Livsey, with Avon for 23 years, was, prior to his promotion, a buyer in the purchasing department.

Max Factor Expansion

Max Factor will soon begin construction of a new, three-story office and laboratories building in Hollywood, according to Davis Factor, chairman of the board. It will be located at 1651 North McCadden Place.

The new building will provide the company with additional space and room for expansion that it has needed for the past few years. The unique design will make it possible for Max Factor to utilize approximately 60,000 square feet of floor space and parking facility. It has movable partitions for flexibility of office arrangement.

Named V.P., Pfizer Corp.

Dr. Eric J. Hewitt, vice-president of Evans Research & Development Corp.

Architect's drawing of new three-story office and laboratories building of Max Factor, which will be built at 1651 N. McCadden Place, Hollywood. Cost of structure will approximate $1 million.

Century Brand fatty acids meet the demands of the drug and cosmetic industry for consistently high grade products.

If you require a **Triple Pressed Stearic Acid** with large crystals for sheen, **Century 1240** will meet your requirements. If you prefer a smaller crystal material, **Century 1230** is the grade for you.

If white esters of **Double Pressed Stearic** are your desire **Century** has **Double Pressed Stearic (1220)** which will give you such white esters and without bleaching.

If color is important in your **Oleic Acid** requirements for shampoos, etc., **Century** has a grade to meet your needs. Whether it be a certain color of standard Distilled Oleic or a water white Double Distilled, **Century** has the product to meet your requirements.

Write Today for a Catalogue and Samples.

HARCHEM DIVISION
Wallace & Tiernan, Inc.
Successors to W. C. Hardesty Co., Inc.

25 MAIN STREET, BELLEVILLE 9, NEW JERSEY
Factory: DOVER, OHIO
In Canada: W. C. Hardesty Co. of Canada Ltd., Toronto

JOHN E. GRIMM

DONALD L. BRYANT

JOHN J. STEEVES

Grimm, V.P., Williams

John E. Grimm has been elected vice-president in charge of marketing for the J. B. Williams Co., according to Charles T. Lipscomb, Jr., president. For the past three years he had been group merchandising manager for the Pepsodent division of Lever Brothers.

New DPI Sales Office

Distillation Products Industries division of Eastman Kodak Co. has opened a new sales office in Memphis, according to Raymond W. Albright, general manager. John F. Hanrahan has been named manager.

The office will help handle increased business in all of the division's product lines in the Southeast, especially of D.P.I. monoglycerides, and will also handle vitamin A and vitamin E.

Givaudan Christmas Party

Givaudan-Delawanna, Inc., held its annual Christmas party at the Swiss Chalet, Rochelle Park, N. J., on December 18, with approximately 400 employees present. Since this event occurred on the firm's 30th anniversary, the company distributed pens to all its employees and read cables from associate Givaudan firms abroad.

The gathering was addressed by E. R. Durrer, president; Dr. Max Luthy, vice-president and plant manager; and H. F. Duffy, treasurer.

Twelve 25-year veteran employees were presented with gold Swiss watches at the party, a thirteenth having received his watch at a previous dinner at the company's Chicago branch. These men so honored were: John Bardzik, Joseph Cicone, Emil De Luca, Charles Dolecki, Alexander J. Gogolin, Edward Matthiae, Matthew Motyka, Thomas F. Novak, Stanley Olsiewski, Dante Pavan, Anne Schauder, Fred Stiritz and Michael Switek.

Bryant, Exec. V.P., Hudnut

Donald L. Bryant, formerly administrative vice-president, has been appointed executive vice-president of Hudnut Sales Co., according to Alfred E. Driscoll, president of Warner-Hudnut, Inc. He will be responsible for sales, advertising, merchandising, research and development activities of the company's Richard Hudnut division.

Henry, President, SAACI

John F. Henry, Adams-Henry Chemical Co., has been elected president of the Salesmen's Association of the American Chemical Industry, Inc. Other officers and directors are: E. L. Collins, Chilean Nitrate Sales Corp., vice-president; V. L. Rebak, Grace Chemical Co., treasurer; R. J. Roberts, Emery Industries, secretary; and, as directors, R. L. Williams, Givaudan-Delawanna, Inc.; S. B. Scott, Wyandotte Chemicals Corp.; H. B. Clark, Diamond Alkali Co.; R. H. Kampschulte, Celanese Corp. of America; and G. S. Furman, George Uhe Co.

Appointed by Helene Curtis

John J. Steeves has been appointed general sales manager of the Helene Curtis Industries Toiletries division, according to George M. Factor, vice-president. He was formerly vice-president in charge of sales of Lee, Limited.

Parenteral Drug Elections

Dr. David M. Ashkenaz, Wyeth Pharmaceutical division, American Home Products Corp., has been re-elected president of the Parenteral Drug Association for 1955. Also elected were Dr. Harold Blumberg, Endo Products, Inc., as eastern vice-president; William S. Bucke, Lafayette Pharmacal, Inc., western vice-president; F. C. Ninger, Warner-Chilcott Laboratories, secretary; and L. James Graham, Burroughs-Wellcome & Co., treasurer.

New directors elected were John Henderson, Chase Equipment Corp.; Joseph F. Greene, Kimble Glass Co.; and Dr. Anton K. Maier, Sandoz Pharmaceuticals division, Sandoz Chemical Works, Inc.

Attending annual Christmas party of Givaudan-Delawanna, Inc., are, left to right, (seated), F. Stiritz; Dr. Max Luthy, vice-president and factory manager; A. Schauder; E. R. Durrer, president; H. F. Duffy, treasurer; and A. Gogolin. Second row: E. Matthiae, M. Motyka, J. Ciccone, D. Pavan, J. Bardzik, C. Dolecki, M. Switek, E. DeLuca and S. Olsiewski.

#1

Non-rolling, extra-depth, Bakelite cap; thick-flange rubber bulb; Saftee-ball glass.

#3

Regular plastic cap; thin flange rubber bulb; semi-blunt glass.

#4

Metal cap; AMEKINE oil-resisting synthetic rubber bulb; blunt glass.

Improved bottle shape. Designed to lie flat for convenient labeling. Front provides ample label space.

New Perfection

DROPPING PARTS

Protect YOUR PRODUCT'S REPUTATION

Your product's hard-won reputation is risked every time it is taken from the medicine chest. Any inconvenience, such as a non-functioning dropper, will be permanently associated with it. You can remove this risk by entrusting your carefully-compounded preparation to New Perfection dropping parts—painstakingly made of quality materials for the utmost in dependability and cleanliness.

✸ ***We can supply dropping parts to fit your bottles or furnish complete with our own bottles.***

RUBBER BULBS

are supplied in many styles and colors. Oil-resisting AMEKINE synthetic rubber is used for oil preparations; natural rubber is supplied for other products.

CAPS

of plastic or metal, can be furnished in a complete range of sizes and colors.

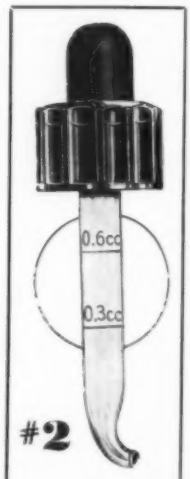
DROPPER GLASSES

are available in a wide variety of styles and sizes. Plain or CALIBRATED in any color to mark specific dosages.

BOTTLES

in an attractive modernistic style in Amber, Blue, Green or Clear glass, are available, complete with dropping parts, in the following sizes: 2cc, ⅛, ¼, ½, 1 and 2 oz.

Write for Samples and Quotations



#2

Non-rolling extra-depth Bakelite cap; thick flange rubber bulb; CALIBRATED special bent glass.

PENNSYLVANIA
GLASS PRODUCTS CO. INC.

"Glass Goods of the Better Kind"

430 N. CRAIG ST. • PITTSBURGH (13), PA., U.S.A.

Perfume Society Symposium

The American Society of Perfumers, Inc. will hold its first open symposium on March 16 at the Advertising Club, Park Ave. and 35th St., New York, under the heading, "The Perfumer Speaks." The meeting will deal with perfume questions of equal interest to perfumers and chemists, management and consumers, experts and laymen. The subjects will include the question, "Specialties in Perfume Creations," and a round-table conference of perfumers and chemists will discuss the problems involved in "Adaptation of a fragrance to a complete toilet goods line."

Frazer V. Sinclair, *Beauty Fashion*, and honorary member of the American Society of Perfumers, will act as moderator at the forum which will be made up of leading personalities connected with the fragrance industry.

The meeting will start at 4 p.m. The technical discussions will be followed by a cocktail hour at 6 p.m., and dinner at 6:45.

Arrangements are being handled by the program committee of which Dr. Oliver L. Marton is chairman, assisted by Pierre Bouillette, Everett Kilmer, Walter Lengsfelder and Ernest Shiftan. Reservations at $8 a person for nonmembers, including cocktails and dinner, should be mailed early to Dr. O. L. Marton, Shulton, Inc., Clifton, N. J.

MMR Sales Conference

Brightest prospects for Magnus, Mabee & Reynard in 1955 were forecast by President Percy C. Magnus, at the company's 24th sales conference last month. Vice-presidents Joseph B. Magnus, Robert B. Magnus, George H. McGlynn and other executives including Arthur H. Downey, chairman, and Bernard Jeffs, co-chairman of the conference.

Dirr Retires from Huisking

Peter A. Dirr has retired as vice-president and director of Chas. L. Huisking & Co. The announcement was made at a luncheon given in his honor at the Wool Club on December 29, the 43rd anniversary of his association with the company. He began his business career, along with Charles L. Huisking, at the Thomas M. Curtius Co. He was later associated with McKesson & Robbins, Inc. before joining Huisking as a buyer in 1911.

LESTER E. DAVIS

Promoted by Pitman-Moore

Lester E. Davis has been appointed purchasing agent by Pitman-Moore Co., according to K. F. Valentine, president. He has been in the organization's sales department for 18 years.

Mrs. William D. Barry

Mrs. Mary J. McGowan Barry, wife of William D. Barry, vice-president of Mallinckrodt Chemical Works, died January 31 in St. Luke's Hospital. She was a retired teacher in the city schools and was one of the first teachers to accept a class of retarded, or ungraded, pupils. She retired several years ago after having taught for 30 years at Public School 17.

She also leaves a sister, Mrs. Jeanne Barrett.

Thomas C. Fulton

Thomas C. Fulton, 72, vice-president and secretary, and a director, of Anchor Hocking Glass Corp., died suddenly January 7 at his home in Lancaster, Ohio.

Rudolph J. Hahn

Rudolph J. Hahn, vice-president of Zonite Products Corp., died January 2 at his home of a heart attack. He was 47 years old and had been with the company since 1927.

Dr. Thomas Lewis

Dr. Thomas Lewis, formerly vice-president and technical director of S. B. Penick & Co., died January 29 in Flower and Fifth Ave. Hospital after a long illness. He was 65 years old. He had been a member of the Revision Committee of the United States Pharmacopoeia, the Committee on Pharmacognosy of the National Formulary, the executive committee on research of the American Proprietary Association, and the combined contact committee of the American Drug Manufacturers Association and the American Pharmaceutical Manufacturers' Association.

Dr. Edmund N. Gathercoal

Dr. Edmund N. Gathercoal, a past-president of the American Pharmaceutical Association and former chairman of the Committee on National Formulary, died December 27. He was awarded the Remington Honor Medal in 1936 and the following year was elected president of the American Pharmaceutical Association.

John H. Kelly

John H. Kelly, 54, former executive vice-president and director of advertising for the Emerson Drug Co., died suddenly in West Palm Beach, Florida, on December 27. He had retired gradually from business following a long career in advertising and selling. He joined Emerson in 1944.

Harry E. Pfaltz

Harry E. Pfaltz, president of Harry E. Pfaltz, Inc., died at Flower & Fifth Ave. Hospital January 25. He was 57 years old. He had studied the perfumery business in Leipzig, Germany, between 1913 and 1915. Since 1927 he had been president of the firm bearing his name.

Theodore H. Rider, Sr.

Theodore H. Rider, Sr., director of research for Coty, Inc., died January 31 in St. Barbabas Hospital, New York. He was 51 years old. He had formerly been director of research for Lever Brothers and for the Pepsodent Co.

Herbert B. Sliger

Herbert B. Sliger, a member of the chemical industry for more than 30 years, died on December 19, at New Rochelle Hospital, New Rochelle, New York, after a prolonged illness. He was 56 years old.

He had been with Commercial Solvents Corp. in a number of capacities, including those of assistant general sales manager and manager of the purchasing department.

Fred J. Wood

Fred J. Wood, vice-president of the Crown Cork & Seal Co., Inc., died December 19 at the Johns Hopkins Hospital after a two-month illness. Forty-five years old at the time of his death, he was general manager of the company's Crown and Closure division and had formerly served in executive capacities with the Rheem Manufacturing Co., the A. O. Smith Corp. and Montgomery Ward & Co.

Special-Class
AROMATIC CHEMICALS

Modern de luxe perfumery attempts to achieve the best results by use of the finest and purest raw materials. Just as the perfumery expert chooses the best essential oils of greatest richness of scent and uses especially selected drugs, so, too, he poses special claims in regard to chemically pure perfumes. The realisation that chemical purity does not necessarily mean odorous purity caused us to try out new methods in our production in order to eliminate even the last traces of side-odours from our chemically pure products. Our new SPECIAL-CLASS PERFUMES, therefore, are not only chemically pure, but have an absolutely pure odour. We offer the perfumer raw materials for de luxe perfumery, the odorous effect of which is impaired by no troublesome admixture whatever. We emphasize that the odorous purity of our Special-Class Perfumes is the result of exact methods of purification and not of any contact procedure such as is sometimes practiced by other companies.

We endeavour steadily to enlarge the range of these exquisite perfume products. The following list will show all perfumes which we are now able to produce in absolute purity of odour.

Special-Class Alpha-Hexyl Cinnamic Aldehyde

A new jasmine-like perfume of odorous as well as chemical purity. The tendency of its odour is the same as that of alpha-amyl cinnamic aldehyde used heretofore. The advantage of the new product consists in the fact that it does not contain even a trace of the disagreeable side-odour that adheres to even the best and specially purified products of alpha-amyl cinnamic aldehyde and is highly annoying in composition. We have tested this new jasmine product for several years and have found its intensity and richness to be about the same as that of alpha-amyl cinnamic aldehyde. In all compositions hitherto built up out of alpha-amyl cinnamic aldehyde, the new perfume can be substituted without difficulty. Our experiments have shown that it imparts a sweeter, more delicate and subtle fragrance and greater fidelity to nature to all compositions.

Special-Class Anisic Aldehyde

Since anisic aldehyde is synthetically manufactured from paracresol via paracresol methylic ether, the perfumers have never ceased to complain that even well-purified commercial products possess a hard, even animal-like side-odour, modifying their fine character of hawthorn in an undesirable way. Our purification experiments carried out to a wide extent convinced us that a return to the old production method from anethol is indicated for anisic aldehyde if especially fine products are desired for perfumery. The anisic aldehyde obtained from anethol is submitted to a purifying method especially designed for it and assuring absolute purity. Anisic aldehyde is a colourless liquid crystallizing in freezing mixtures and melting between 0 and —2° C. The odour of this purest perfume is absolutely different from that made of paracresol; it is of a surprising subtlety, with its soft, sweet, flowery background so much favoured in pure anisic aldehydes. Its popular powdery note is very expressive in compositions.

Winter motive with partial view of Dragoco

Special-Class Cinnamic Alcohol

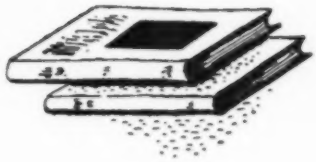
The usual commercial qualities as well as well-purified preparations of synthetic cinnamic alcohol show raw or moderate side-odours much in contrast to the discrete flowery fragrance of perfectly purified laboratory products or to cinnamic alcohol separated from storax. We have expended much effort in elaborating a procedure for serial production of a cinnamic alcohol of purest quality with the very soft, flattering fragrance particular to it. We are sure that this product of absolutely pure odour will find widespread interest, all the more as we were able to try out its superior suitability for the most delicate compositions ourselves.

If desired we gladly send you our Dragoco-Reports regularly. This monthly Information Service with Price-, Market- and Research-Reports is at your disposal free of charge.

DRAGOCO

HOLZMINDEN GERMANY

TELEX: 023378 · CABLES: DRAGOCO HOLZMINDEN (WEST GERMANY)



Trade Literature

Booklet on Sipex

American Alcolac Corp., 3440 Fairfield Road, Baltimore 26, Md., is offering a new and complete product information booklet on Sipex, fatty alcohol sulfates for industrial uses. Physical properties and many uses of the product are given.

Dispersion Problems

A new, more detailed 48-page publication on dispersion problems is available from Kinetic Dispersion Corporation, 95 Botsford Place, Buffalo, N. Y. Comparison charts of results of various dispersion methods used in industry and other technical data of vital interest are included. A portion of the book consists of material from lectures of C. C. Candee, technical consultant, given at the University of North Dakota on the behavior of materials in solid, liquid, and dispersional phases.

Silicone Guide

Dow-Corning Corporation, Midland, Michigan, has issued a 1955 reference guide on silicone products. This eight-page publication contains a maximum amount of information in limited space, including tables, graphs and photographs. Comparable data on various silicone products and the organic materials they displace are also given to permit preliminary evaluation.

Monamine Add-100

Mona Industries, Inc., Chemical Division, Paterson 4, N. J., has issued Technical Bulletin No. 217 which describes Monamine Add-100. This product is said to be a new synthetic detergent of the alkylolamide type with a light yellow color, and practically odorless.

Freeze-Drying Units

F. J. Stokes Machine Company, 5500 Tabor Road, Philadelphia 20, has issued a four-page folder (Bulletin No. 745) describing two new special-purpose freeze-drying units developed for histological studies and for preserving bones, arteries and other human tissues for surgical grafting.

Cellosolve & Carbitol Solvents

Carbide and Carbon Chemicals Company, 30 East 42 Street, New York 17, has issued a 40-page booklet (F-4765) on Cellosolve and Carbitol Solvents, which describes in detail the nine commercial glycol ethers sold by the company. An important feature is a section on the specifications of the glycol ethers and the test methods used by Carbide to check these specifications.

Sturge Products

H. J. Baker & Bro., 600 Fifth Avenue, New York 20, have made available a new 20-page booklet, entitled Sturge Products, which describes the various forms of precipitated calcium carbonate as well as other products manufactured by John & E. Sturge Ltd., of Birmingham, England.

Calculation of HLB

A pamphlet now available from Atlas Powder Company, Wilmington 99, Delaware, reveals the Atlas method for calculation of HLB (Hydrophile-Lipophile Balance) numbers of non-ionic surface active agents. These numbers indicate whether the material in question is hydrophilic or lipophilic; in general, the higher the HLB value, the more the hydrophilic and more water-soluble the material, and conversely, the lower the value, the more lipophilic and more oil-soluble the material. The pamphlet, Calculation of HLB Values of Non-Ionic Surfactants, shows how the HLB number can be mathematically computed for several types of non-ionic materials, using factors derived from the chemical composition of the material.

Acetone Data

Acetone is described in a 12-page folder (8650) issued by Carbide and Carbon Chemicals Company, 30 East 42 Street, New York 17. Data are included on physical and physiological properties, specifications, constant-boiling mixtures, general solvent properties, and resin solubilities. Six easy-to-read charts show physical properties of interest.

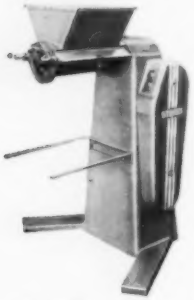
SpeedMatic Micro-Projector

Bausch & Lomb Optical Co., Rochester 2, N. Y., has issued a six-page folder (Catalog E-246) describing the SpeedMatic Micro-Projector which makes possible fast, simple projection of true-color microscope specimens for group study by doctors, students, and laboratory technicians. The instrument operates as simply as an ordinary slide projector without annoying distractions caused by lens changing, condenser focusing, or arc lamp adjustments, it is said.

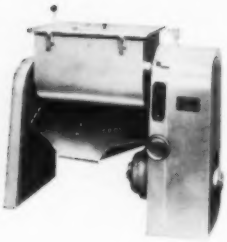
Molybdenum Compounds

Climax Molybdenum Company, 500 Fifth Avenue, New York 36, has issued an eight-page bulletin, entitled Thermodynamic Properties of Molybdenum Compounds, which is a collection of thermodynamic values for molybdenum and its more important compounds based on a comprehensive search of the literature for the past 20 years.

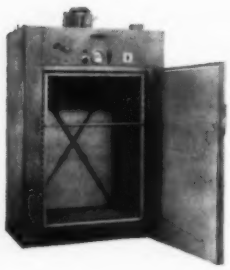
STOKES PHARMACEUTICAL AUXILIARIES



The Stokes Oscillating Granulator breaks up moist aggregates for drying, and dried aggregates for final compression to tablets.

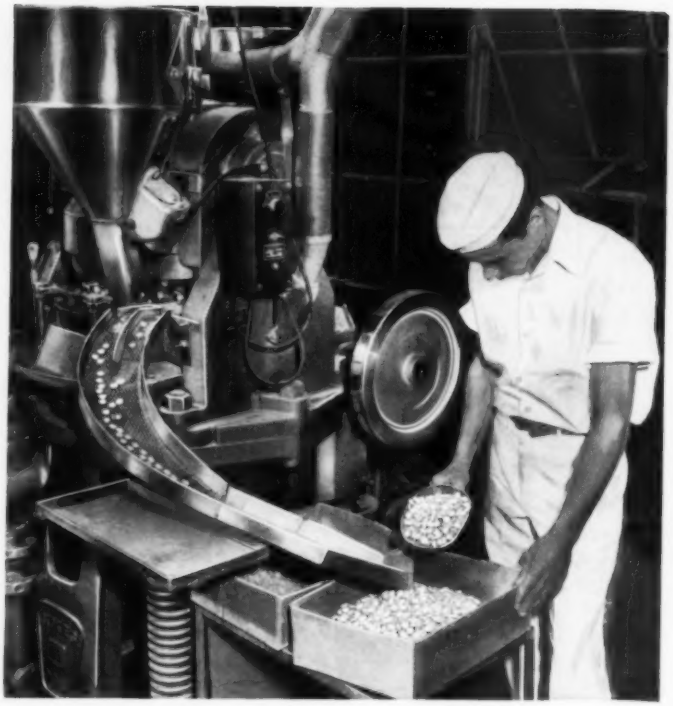


The Stokes Mixer blends basic tablet materials or mixes lubricating powders and flavoring oils with granulations.



Stokes Drying Closets with carefully channeled hot air, are used for drying granulations, salts, rouge and other materials. Vacuum shelf dryers and vacuum freeze-dryers are also available for handling products sensitive to both heat and oxidation.

Stainless steel or spun copper coating pans are available in 16- to 42-inch diameter with capacities of 15,500 to 270,000 5-grain tablets. Polishing heads are made with removable canvas drums, 28 or 36 inches in diameter, and are interchangeable with metal coating pans.



"All-Stokes" Equipment in Clorets Production Line

Stokes' participation in the production of Clorets Candy Mints containing chlorophyll goes "back of the beginning". Tablet design, formulation, and test procedures for production of this popular product were worked out by Stokes Advisory Service in cooperation with American Chicle Company's experts.

From mixing and preparation of ingredients to making of the finished product on four Model DD-2 tabletting presses, Stokes pharmaceutical equipment maintains the needed high and steady production of perfectly formed tablets.

For 50 years pharmaceutical manufacturers throughout the world have shown confidence in "all-Stokes" production lines and the skills of Stokes Advisory engineers.

F. J. STOKES MACHINE COMPANY
PHILADELPHIA 20, PA.

Offices in principal cities.
Representatives throughout the world.

STOKES

STOKES MAKES: High Vacuum Equipment, Vacuum Pumps and Gages / Industrial Tabletting, Powder Metal and Plastics Molding Presses / Pharmaceutical Equipment

Management Forum

by Francis Chilson
INDUSTRIAL CONSULTANT

The Priceless Ingredient

The priceless ingredient of any formula is the ability to sell it in quantities sufficient to make substantial net profits. According to the old Squibb squib it was the integrity of the maker of the product. But no product's maker has any integrity in the public's view until he has sold a hell of a lot of stuff and thus has become widely known—as Dr. Squibb and his successors had become when they discovered the priceless advertising ingredient.

In spite of this truism I am often impressed with the degree of sacredness with which the formula of a successful proprietary product is held by marketing men. The formula must not be touched, say the sales blokes, lest sales fall off. If the technical department does change the formula to improve it and sales do fall off coincidentally there is hell to pay. The sales people knew what would happen all the time. If, however, sales go up after the formula has been changed nothing whatever is heard from the sales division, because the incident to them merely demonstrates that in spite of a formula change, they have again proved their superior selling ability.

Recently the president of a nationally known company was expounding on the fact that his product was indubitably the best in the world. Thousands of attempts had been made to duplicate it but none had succeeded. The public simply wouldn't have any other product but his, and he wouldn't stand for any formula change whatever, and, that was that. His adamant attitude amused me. I pointed out to him that in a book I had published twenty years ago there was a formula identical with his, with the exception of one minor ingredient. His answer was that this minor ingredient was, therefore, the major difference that made his product supreme in the world. I didn't argue the point further.

I could have pointed out that during the war his formula had been changed by his chemists many times when substitutions had to be found for glycerine and other materials, and that these changes had not made one iota of difference in the sales of the product. My friend didn't realize that the priceless and unobtainable ingredient in his product was the twenty-five years of intensive selling effort and the millions of dollars of selling and advertising expenses that had gone into it. This was the ingredient that duplicators of the product couldn't reproduce. As a matter of fact the exact duplication of the product was technically relatively simple.

To illustrate the point further an amusing incident occurred. Since we could change neither formula nor process we merely changed batch sizes to improve efficiency and reduce costs. Shortly after the new plant was in operation sales took an unexpected dip and coincidentally an unusual amount of returns began to come in. The sales division raised a hell of an uproar. We had changed the process and ruined the business! Even the president got a bit worried and asked me if it would be possible in the new plant to restore the old methods of manufacture. I said we couldn't because we had sold all the old equipment and I told him to keep his shirt on because I knew two things: one that percentagewise the returns were actually below normal even though greater in total dollars, because the marketing boys had forgotten that the year previously they had enjoyed a sales increase of fifteen per cent; secondly I pointed out that the returns were all old stuff made under the old method. Fortunately they had a coding system that proved the point beyond challenge. So the uproar died down and after sales recovered, the sales boys conceded that we in the technical end weren't such a bad bunch of morons after all. One of the most spectacular cases in the proprietary industry was the change during the war when Grove not only had to change the formula of Grove's Laxative Bromo Quinine but also a trade name that had been established for more than sixty years. The government wouldn't allow Grove to use any quinine in the formula at all and the FDA wouldn't allow them to go on using

THEIR HIGH AIM IS HELPED by PNEUMATIC'S bottling efficiency

Providing curative and preventive medicines, for the better health of mankind, is the Parke, Davis purpose in life.

Keeping costs in line in the process of producing and packaging these health giving products calls for the highest standards of plant efficiency. That's where Pneumatic lends its helping hand.

Parke, Davis & Co. are the proud possessors of the very newest and most modern of Pneumatic machines — a close-coupled bottling line. This is virtually three machines — cleaner, filler and capper — in one. Hooked up to a Pneumatic Labeler, it provides a smooth, fast, compact arrangement for complete automatic bottling, at "lower cost per container."

It's another Pneumatic "first" — one of many that have established Pneumatic as the most versatile designer and builder of packaging equipment — for both dry and liquid products.

PNEUMATIC SCALE CORP., LTD., 70 Newport Ave., Quincy 71, Mass.
Also: New York; Chicago; Dallas; San Francisco; Los Angeles; Seattle; Leeds, England. Canadian Division: Delaware & Williams Company, Ltd., Toronto.

View of Pneumatic Close-Coupled bottling line in operation at plant of Parke, Davis & Co. in Detroit

PNEUMATIC

Packaging and Bottling Equipment

the trade-mark—"Grove's Laxative Bromo Quinine"—because there was no longer any quinine hydrobromide in it. Instead of bewailing its fate the company capitalized the changes in its advertising, and sales of the new product, Grove's Cold Tablets, exceeded the previous peak of L.B.Q. by a substantial amount.

Thought for Today

When you detract from the stature of another person, you subtract from your own by the square root of the detraction.

Family Dynamics

In the past I have argued for a limitation on the size of wholly owned family corporations. I have said that a limit could be placed on the growth of such corporations by taxing all their profits after they reach a certain size, unless a certain portion of their capital stock has been made available by purchase to key employees or to the general public as well. The corporate form of organization is a public benefaction and no public benefaction should forever exclude the participation of the public. Recently this point of view was caustically challenged by some friends who wholly own or participate in family-owned corporations. They argued that some of the largest and most dynamic corporations in the world are family owned. No one can deny this and if my previous articles are read without prejudice I never did.

There is no doubt whatever that when a dynamic family establishes a business and passes it on to succeeding and, possibly, even more dynamic generations, the fact of family control is a very good thing so long as it does not lose its virility. The attitude of a family toward its own enterprise is very different from the attitude of a professional manager. There is more pride in a family group and when interest is maintained at white heat in the family enterprise it is apt to be kept moving forward. But when you analyze the real situation in the great family enterprises you will find they have done exactly what I believe in. They have made substantial amounts of stock available to their employees and in most cases to the public as well. The duPont organization is looked upon as a family owned corporation. It is family controlled but the majority of its stock is owned by a very large public.

The Krupps in Germany built an immense industrial empire and still control it. But the stock of the organization can be bought by employees and anyone else who has the money.

The Mitsui family in Japan built one of the world's largest industrial empires and although its stock can be bought in Japan the Mitsui family controls and manages every important division of the business. Such is their strong family pride that whenever they discovered an administrator of exceptional ability he was adopted by the family and he became a Mitsui too. I don't think the system would work here. But it is a fact that the original family drive is still being maintained by one means or another and that's what counts.

In our field Bristol Myers is thought of as a family affair because it is still controlled and managed by the Bristols, though actually the major portion of the stock is owned by the public. The Bristols—Bill, Henry, and Lee—are a triumvirate of exceedingly able men who have maintained and extended the family dynamic.

Jack Searle is certainly a far more able man than either his father or his grandfather and the Searle business is established upon a basis which permits the participation of the public and employees as well.

The Lillys, Eli and J.K., are far more able men than their parent and proved it by building one of the largest pharmaceutical companies in the world. Here again stock participation was available to key employees and recently to the public. The Lillys have both retired and have turned the management reins over to people outside the family.

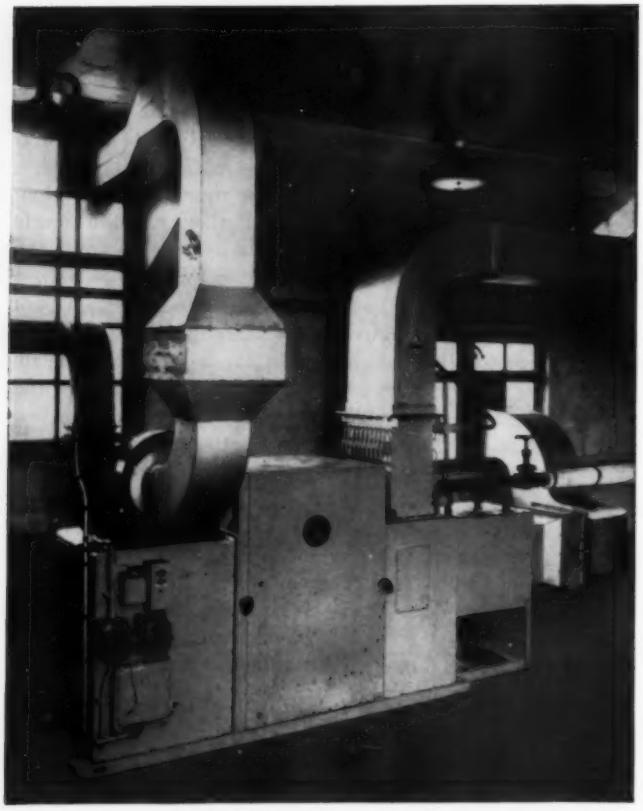
Compared with these examples there are many equally great organizations in the drug and cosmetic industry that are operated by people other than the families who founded or control them, viz: Ponds Extract Co., Park Davis, White Laboratories, Emerson Drug, Wyeth, Sterling Drug to mention only a few.

Among the great international enterprises the great banks and insurance companies are all operated by professional managers. So also are General Motors, U. S. Steel and most of the huge oil companies.

I am not against family control and family ownership when key employees or the public participate to a substantial extent. I am against only those families who enjoy in the entirety economic benefits that the public and their key employees have conferred upon them and who use those benefits to perpetuate a system of unfair nepotism.

The Importance of Approach

One of the things that always has impressed me is the degree to which production and marketing people in particular fields become so deeply indoctrinated in the operating tenets of their own fields that they cannot adjust themselves to different psychological approaches in other fields, even though operational patterns may be quite similar. I know that a really good salesman prides himself on being able to sell anything to anybody. Undoubtedly that is true but back of that salesman is an administrative and financial complex that cannot so easily make the adjustment from one field to another. On several occasions I have advised clients not to expand their activities into fields in which I did not think they were capable of succeeding. Some did in spite of my advice and lost their hides. Others didn't and later thanked me for sounding a warning signal. Frequently opportunities come along to buy companies that make products which are distributed through the same channels as your own. This makes the opportunity look inviting. You can handle the distribution with your own marketing organization. But beware!



This British-made Lectrodryer* delivers DRY air to the room where toffee is wrapped.

"We had to boil our boots"

says a British candy maker

"Now we pick up the toffee chips with a vacuum cleaner"

In the normally moist atmosphere of this candy factory, toffee chips which fell to the floor soon got so sticky that they piled up on the workers' shoe soles. We have the owner's word for it that they actually had to boil their boots to get rid of the gummy mess.

Imagine what this moisture and its resulting stickiness did to packaging machine efficiency!

An atmosphere in which toffee chips stay dry as dust permits uniform production the year around. This is a lesson which men who handle sugar and other hygroscopic materials learned long ago. They stay in production, regardless of outdoor humidities, and processes proceed at top speed.

The booklet, "*Because Moisture Isn't Pink*", tells how others are using DRYing to advantage. For a free copy, write Pittsburgh Lectrodryer Corporation, 309 32nd Street, Pittsburgh 30, Pennsylvania.

In England: Birlec, Limited, Tyburn Road, Erdington, Birmingham.
In France: Stein et Roubaix, 24 Rue Erlanger, Paris XVI.
In Belgium: S. A. Belge Stein et Roubaix, 320 Rue du Moulin, Bressoux-Liege.

LECTRODRYERS DRY WITH ACTIVATED ALUMINAS

LECTRODRYER

* REGISTERED TRADEMARK U.S. PAT. OFF.

During the depression many pharmaceutical companies thought it a simple thing to buy cosmetic houses simply because such products move through the same trade channels. Every single one failed completely and lost pots of money. The exception was Squibb. But Squibb succeeded because a clause in the purchase contract prevented Squibb from interfering in any way with the marketing organization or methods of Lentheric, the company which it had bought. Even Pond, a cosmetic house itself, took a licking when it purchased a low-volume, high-priced cosmetic line. The organization simply could not reorient itself to the difference in psychological approach. It was geared up to mass selling and mass production and it couldn't gear down.

The high-priced perfume houses have tried selling cosmetic lines at one time or another but they found that the hoopla in one field doesn't work in the other. American Home Products Company started out as a drug company and as a drug company it has done very well but its record in selling cosmetics and foods is not comparable by any means, and that is saying it mildly. As to individuals I can't recall a top-notch proprietary marketing man who ever made the grade as a top-notch ethical marketing man or vice versa.

Where proprietary companies have acquired ethical companies they have succeeded only when they left the ethical organizations intact and didn't try to run the ethical division with proprietary forces. We all know what happened recently when a proprietary man, who was running an ethical show, tried the proprietary approach in advertising ethicals to the public.

The desire to diversify seems universal. I have never seen a need for diversification when it is obvious that a particular company has no where nearly exhausted its potential in its own field. The idea that you can take over a different company and make a success of it simply because its products are distributed in your own outlets is a dangerous misconception. I have heard directors dwell with gleaming eyes and drooling lips upon what will happen to earnings when they take over another company. "We can handle it," they say, "with our own marketing force, with our own office staff. All we have to do is make the stuff. Everything above that is profit!" Idle dreams! Nothing is easier than to kid yourself.

Now, it is a fact that holding companies do successfully operate different companies in different fields but they are successful only when they confine themselves to accounting and financial control and allow the several controlled organizations to operate as individual entities.

The Flying Saucers

You can relax now. You have nothing to fear any more. Those saucers you've been hearing about are not coming from Mars but from Australia. You need not worry about an invasion from Mars but you do need to worry about an invasion from Australia. I know. I've had it. If all Aussies are like the samples they sent up to me, it would take only a dozen more to take over the whole bloody country. I was pursuing the quiet, even tenor of my way when I received a cable from the managing director of Nicholas Pty. Ltd. to the effect that George Wells, their production bloke and Don Lumsden their architect, who are working with me on the design of Aspro's new plant in Melbourne, were on their way to New York en route to London and I was instructed to keep them under control. Krist what an assignment! It was like trying to stuff a couple of kangaroos into Pandora's box.

The trouble was that they were shipped up here by air which didn't give them time to adjust their blood pressure. You see the Aussies spend their lives walking upside down on the earth's bottom consequently their blood is mostly in their heads. When they are brought up here too quickly to the top of the world the blood rushes to their feet and they become light headed.

On New Years Eve I took them to Times Square to see what a half million people look like in one small spot. Afterward we went into a little pub not far from the Square where we sang sentimental little Australian ditties like "When the Silikunt Sang in the Walliboora Tree" and the "Kokaboora Laughed and He Laughted at Me!" At that point a GI pinched the hostess with whom one of the boys was dancing. The Aussie protested. The GI was going to swing a bottle of whiskey but he never got a chance and in less time than it takes to tell it the air was filled with flying saucers. The Aussies can pitch them like boomerangs. So that settles that. The next time you see flying saucers whizzing over your head, duck, but don't be unduly alarmed. It's just a couple of Aussies out on the town.

Pharmacological Consultation Service

Nellie Perry Watts, Ph.D. of 51 Mt. Vernon St., Boston 8, Mass., operates a pharmacological consultation service, based primarily upon literature surveys. She does a lot of important work in the field of pharmacology and her services would be an important part of your research organization.

The following information is supplied by manufacturers of the equipment described and claims made below by these manufacturers are passed along for what they are worth. Presentation of such notice in this department is not to be taken as endorsement of the claims or of the equipment.

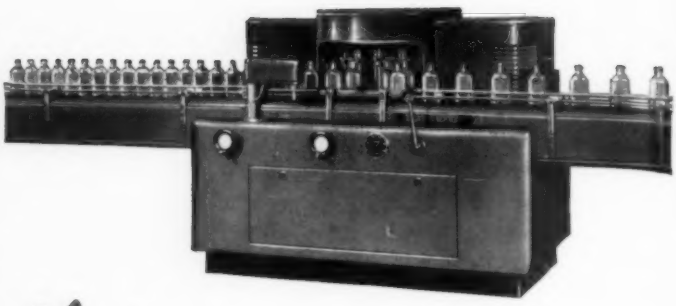
Ampul Marking

More and more manufacturers are abandoning the costly and conservative use of readily destructible paper labels. A familiarity with our equipment will help convince you of the many physical and economical advantages to be gained by printing all specifications directly onto your glass and plastic containers.

Rejafix Marking Machines, available in both hand-operated models for small production and automatic

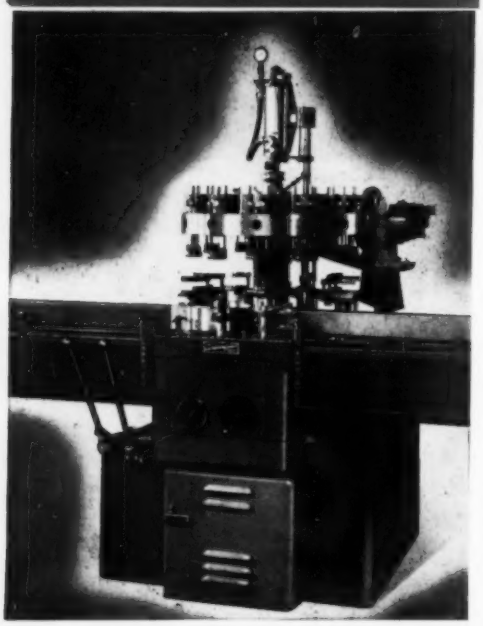
Cleaner than clean?

"Yes" is the judgment of the many who compare!
Karl Kiefer offers you choice of these three long-time favorites with performance records that speak for themselves.



Kiefer BOTTOMS-UP

60 to 80 lbs. of filtered compressed air chases dirt . . . quickly, thoroughly . . . a large high speed fan collects it in a bag...a continuous smooth, precise job all day long.



Kiefer ROTARY AIR CLEANER

Cleans bottles while they are in the upright position. So fast, so complete, it is bought by food, cosmetic, and drug manufacturers.

Kiefer DUO-BLO BOTTLE CLEANER

If you have moderate production, this is your machine. The Duo Blo air-cleans two bottles at a time, up to 40 cycles a minute. Dust, carton fibers, slivers of glass are blasted into a bag . . . pronto!

The Karl Kiefer Machine Co.

CINCINNATI, U. S. A.

NEW YORK • BOSTON • CHICAGO • PHILADELPHIA • SAN FRANCISCO • HOUSTON
SAVANNAH • LOS ANGELES • LONDON, ENGLAND

types for large output, are simple to operate using unskilled labor. Printing on glass can be done with our air-drying inks or, if absolute indelibility of the print is required, with our ceramic inks.

Distributed by Popper & Sons, 300 4th Ave., New York 10, N. Y.

Semi-Automatic Set-Up Box Machine Designed for Field Installation

New four-page folder illustrates and describes the STOKESFEED Model HF unit for conversion of hand-fed Wrappers to Semi-automatic operation.

Photos of an actual conversion in a paper box plant give an accurate step-by-step description from drilling and spot-facing to final production of wrapped boxes.

Substantial savings are claimed because the old wrapper is not moved. This eliminates considerable labor and shipping expense while maintaining basic STOKEFEED construction features.

Folder is available from STOKES AND SMITH COMPANY, 4992 Summerdale Avenue, Philadelphia 24, Pennsylvania. Ask for Bulletin B-502.

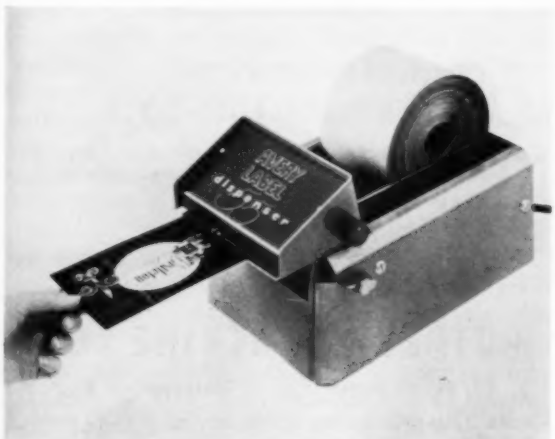
New Avery Electric Label Dispenser

A revolutionary electric label dispenser that feeds pressure-sensitive labels the instant they're needed has been developed by the Avery Adhesive Label Corporation of Monrovia, California.

Completely automatic, this new patented unit—the Avery Label Dispenser "55"—is expected to trim labor costs and increase production in hundreds of varied labeling operations.

This unusually efficient Avery Dispenser eliminates the need for foot switches or rheostat controls. You simply take a label from the mouth of the dispenser and another label rolls out automatically—ready for instant application.

The new Avery unit will dispense one label at a time, or several, depending on the user's requirements. The operator can use split-second timing or intermittent production with this handy dispenser. No matter what the time-lapse, another label is ready and waiting.



The Avery Label Dispenser "55" is designed to handle the remarkable KUM-KLEEN or PERMA-GRIP pressure-sensitive labels which are sold in convenient roll form. Labels are mounted singly, or several across the roll of backing paper to meet varying industrial and commercial requirements. The Avery "55" will dispense labels from ¼″ to 5½″ in width and ¼″ to 8″ in length.

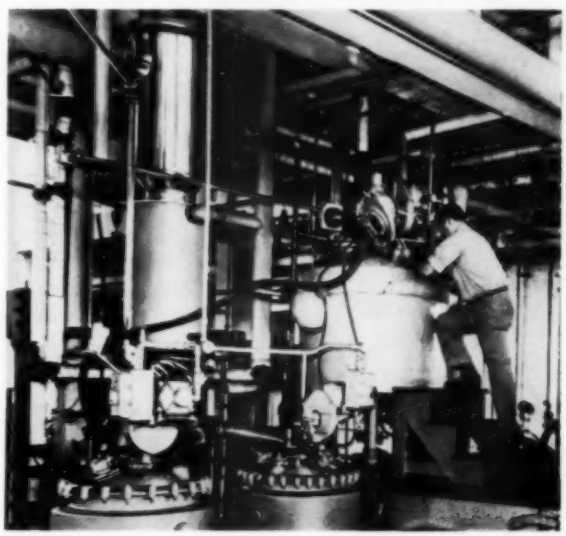
The Avery Label Dispenser "55" has an aluminum housing and weighs only 11½ pounds. Overall dimensions are 13½″ long x 7½″ high and 3½″ wide. Its automatic operation is activated by micro-switch devices and a 50 watt motor. Further details and costs can be had by writing the manufacturer direct.

Turba-Film Evaporator

Here is the first photograph of a Rodney Hunt TURBA-FILM Evaporator ever released for publication. The installation is Hoffmann-La Roche, Inc., of Nutley Park, New Jersey. Here, the evaporator is being used for processing heat-sensitive pharmaceuticals. Many other units located in plants of prominent manufacturers throughout the country are preparing tastier fruit and vegetable juices, smoother candies, more aromatic instant coffees, stickier glues, odorless pet foods, and higher quality pharmaceuticals; just a few of the contributions this evaporator has made to the American home in recent months. Chemical process industries are also benefiting enormously in the way of improved products, lower cost production.

The unique stainless steel evaporator concentrates, distills, deodorizes, degasses, deaerates, heats, cools, or otherwise processes liquids, gases, and slurries in a few seconds by continuous operation. Difficult, heat-sensitive, frothy or heavy viscous materials can be processed in a single rapid pass, usually with no loss and in less floor space than that required for conventional equipment. The TURBA-FILM is capable of evaporating as much as 5,000 pounds of water per hour.

Rodney Hunt's evaporator is designed to handle



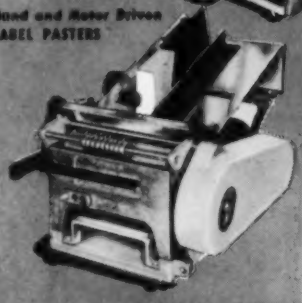
it takes a PRO

TO SOLVE A LABELING PROBLEM!

POTDEVIN LABELING MACHINES

used in more drug and cosmetic plants than any other make

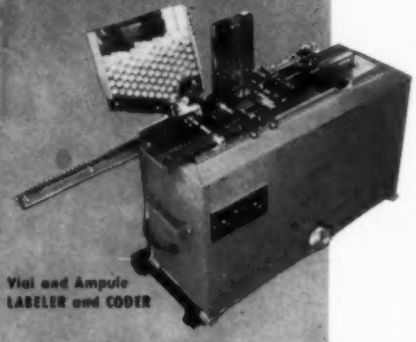
Hand and Motor Driven LABEL PASTERS



Semi-Automatic Feed LABEL PASTERS

LABEL ACTIVATORS for Thermoplastic Labels

Collapsible TUBE LABELERS



Vial and Ampule LABELER and CODER

Ideally suited for short-run production or for auxiliary use so as not to disturb a mass production set-up. Write for literature and details on FREE TRIAL OFFER.

Hand and Motor Driven LABEL PASTERS
Highly versatile, handles any shape label without adjustment. Dial control regulates paste flow, eliminating excess. Cuts stock loss. One machine can supply several operators. Available in 6"-8½" models.

Semi-Automatic Feed LABEL PASTERS
Quickly adjustable to all shapes of labels, from ½" to 7½" wide. Dial regulates paste flow. Speeds production up to 50%. Suitable as auxiliary unit in mass production operation. Leaves mass production equipment undisturbed.

LABEL ACTIVATORS for Thermoplastic Labels
Activates delayed tack, pre-coated labels quickly and evenly. Permanent labeling on glass, metals, plastics, fabrics, etc. No water or glue to smear product. Thermostatic heating control. Small and portable. Available for 6" and 12" widths. Motor driven.

Collapsible TUBE LABELERS
Applies 32 slip labels per minute to collapsible tubes. Automatically forms and ejects label on tube. Machines for ⅛, ¼, ½, 1 oz. tubes.

VIAL and Ampule LABELER and CODER
Thermoplastic labelers in 1, 2, 3, 5 and 10 c.c. sizes. Hopper automatically feeds vial or ampule for labeling and coding.

CUT CLEAN-UP TIME BY 50%

NEW POTDEVIN RELEASE-COTE

prevents coating materials from adhering to the walls of pots, tanks, rollers, shafts, feed tables and other exposed surfaces.

GENEROUS AMOUNT OF RELEASE-COTE SUPPLIED WITH ALL POTDEVIN COATING MACHINES.

POTDEVIN RELEASE-COTE available in quart, gallon and 5 gallon containers.

POTDEVIN MACHINE CO.

257 North Street Teterboro, N. J.

Specializing in Labeling Machines for over 60 years

organic and inorganic chemicals, solvents, pharmaceutical "mycins," vitamins, juice concentrates, edible oils, gelatine, glues, confectionaries, coffee and detergents.

The pioneer drug manufacturer, Hoffmann-La Roche, finds Rodney Hunt's evaporators superior to conventional types, for heat-sensitive pharmaceuticals and reports: "Evaporation takes place rapidly with only brief contact of the heat-sensitive substance with the heating area. Exposure due to forced circulation in the form of an even film of liquid. Decomposition through overheating is avoided and the quality of product is therefore excellent. Entrainment of product solution by the vapors is easily eliminated in the top separation section of these evaporators, while heat transfer efficiency is excellent." Rodney Hunt Machine Co., Orange, Mass.

Compact New Filter

A completely new, space saving filter that incorporates a new filtration principle and gives double the filtering area and volume in the same space required by present filters on the market, has been announced by Bart-Messing Corp., of Belleville, N. J.

In addition to increased volume, the Sel-Rex filter can be used with either a new type stainless steel element or standard porous stone elements, and incorporates several unusual operating and maintenance features.

Double filtration area and volume is accomplished with a new filter element constructed of corrugated stainless steel and wire mesh, which supports a uniquely designed filter bag. Furnished in a variety of cloth materials, the bag type element is suitable for use with any type solution or liquid. If other types of filter media are desired, the Sel-Rex filter can be converted for filtration with porous stone. No additional parts are required for conversion.

Many features for practical and economical plant operation and maintenance have been incorporated into the new Sel-Rex filter which have been plant tested for two years. The entire filter element is attached to the cover of the tank, and is easily removed for quick inspection, cleaning or replacement. As optional equipment, larger models are fitted with a hand operated davit for lifting the cover and element. All models have an extra capacity stainless steel precoat tank, to make precoating a one-step operation. For routine cleaning, the unit can be backwashed. All operating valves are located at the front of the unit, and there is easy access to parts that require routine maintenance.

A complete range of sizes and capacities are now available, for both acid and alkaline solutions, portable and stationary models. Standard portable models have up to 20 square feet of filtration area and a capacity of 2000 G. P. H. Standard stationary models have up to 175 square feet of filtration area and a capacity of 18,000 G. P. H. Larger units, or filters for unusual applications, are designed to specification.

Hand-Operated Fillers

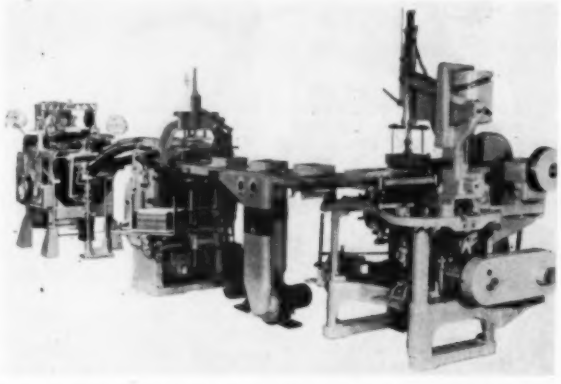
The Packer Machinery Corp. announces the addition of hand-operated fillers to its line of liquid filling machines. Heretofore, Packer has concentrated on large gravity and vacuum straightline fillers. Plans for the coming year, however, include the manufacture of one-two- and three-spout hand units for gravity and vacuum filling. These units will be capable of filling containers up to gallon size and will be equipped with stainless steel contact parts, neoprene or clear plastic tubing and interchangeable nozzles of the type used on the large Packer machines.

Further information can be had by writing the Packer Machinery Corp., 30 Irving Place, New York 3.

New S & S "Stokesmatic" Paper Box Machine Does Complete Job Without Operator

A complete paper box operation—fully automatic in every detail—is offered for the first time in the new "STOKESMATIC," latest addition to the Stokes and Smith line of automatic paper box machines and packaging equipment.

Totally eliminating the need for an operator, the single unit "STOKESMATIC" does the entire box making job, including staying, gluing, accurate wrap registration, feeding and wrapping. Thoroughly tested in actual operation over a period of several months,



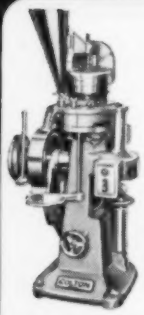
the "STOKESMATIC" is claimed by the manufacturer to offer substantially lower operating costs and tremendously increased profits.

The "STOKESMATIC" has an effective capacity of up to 40 pieces per minute, and handles sizes ranging from 4″ x 2″ x ½″ to 15″ x 10″ x 2¾″. Duplex wrap tables provide continuous wrap feeding to the gluing unit. Other exclusive features include automatic wrap registration and an 8 gallon glue tank with circulating glue system.

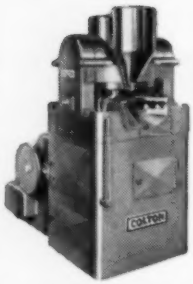
While the "STOKESMATIC" unit is a totally new development, existing STOKESFEED paper box machinery can be converted to fully automatic operation at minimum expense.

Complete information on the new "STOKESMATIC" paper box machine is available from Stokes and Smith Company, 4992 Summerdale Ave., Phila.

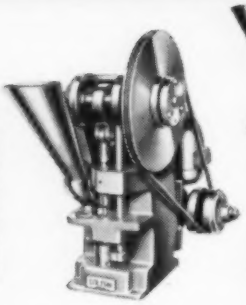
COLTON— FIRST NAME IN HIGH-PRODUCTION EQUIPMENT FOR 70 YEARS



TABLET PRESSES. Single Rotary—Nos. 216; 240; 250; 270. Up to 1150 tablets per min. Up to 2" tablet dia.

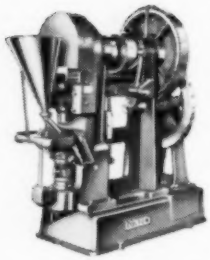


TABLET PRESSES. Double Rotary—Nos. 227; 233; 241; 260. Up to 2900 tablets per min. Up to 1¾" tablet dia.



TABLET PRESS. Single Punch. Bench Type — No. 301. Up to 65 tablets per min. Up to ½" tablet dia.

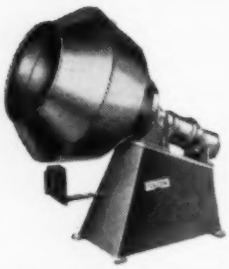
TABLET PRESSES. Single Punch—Nos. 320; 330; 340. Up to 120 tablets per min. Up to 1¼" tablet dia.



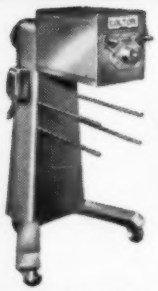
TABLET PRESSES. Single Punch, Heavy Duty—Nos. 345; 350; 360. Up to 85 tablets per min. Up to 3" tablet dia.

TABLET and CAPSULE COUNTERS—No. 715 Single; No. 705, 5-Bottle; No. 710, 10-Bottle.

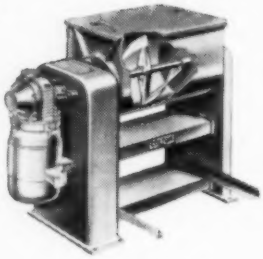
THE ONLY COMPLETE SERVICE TO THE CHEMICAL, DRUG AND COSMETIC INDUSTRIES



COATERS: POLISHERS: BLENDERS:—No. 36. Laboratory Size; No. 26. Bench Size; No. 16. Standard Size; No. 56. Tilting Type; No. 46. Large Blender.



GRANULATORS. Dry—No. 540 Single; No. 544 Twin. Also, Wet Granulators No. 551, 4-Blade; 561, 6-Blade.

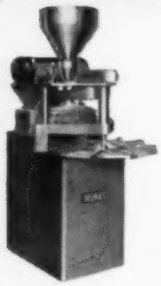


MIXERS. Dry—No. 617, 17 Gal.; No. 636, 36 Gal.; No. 685, 85 Gal.; No. 695, 175 Gal. Also, Paste Mixers.

DRYING OVENS—No. 1018, 10-Tray Lab.; No. 2030, 20-Tray Cabinet; No. 4030, 40-Tray Truck.

STAINLESS STEEL STOCK POTS & TANKS—All types, open and closed. All sizes up to 5,000 Gal.

STANDARD MACHINES • SPECIAL MACHINES • ENGINEERING CONSULTATION • SERVICE

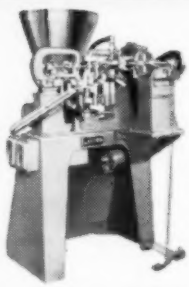


MULTIPLE SPOUT LIQUID FILLERS—32 to 480 fills per min. Up to 4 Fl. Oz. 4, 6, 8, 12 nozzles.

CREAM AND PASTE FILLER—No. 130. Hand Operated. Up to 30 tubes or jars per min. Up to 1" x 5½" tube size, with single stroke.

TUBE FILLERS, AND CLOSERS, AUTOMATIC—Nos. 175; 180; 190. Up to 100 tubes per min., liquid to heavy paste.

TUBE AND JAR FILLERS, GEAR OR WORM, POWER DRIVEN—Nos. 110; 140; 150. Up to 50 fills per min. Up to 2" x 11" tube size.



TUBE FILLER, CLOSER, & CRIMPER, LIQUID & PASTE—No. 113. Up to 40—6-Fl. Oz. fills per min.

TUBE CLOSER, HAND OPERATED—Nos. 440; 450. Up to 20 tubes per min., 2½" x 10" max. size.

Send for catalog of Pharmaceutical Equipment

ARTHUR COLTON COMPANY

DIVISION SNYDER TOOL & ENGINEERING COMPANY

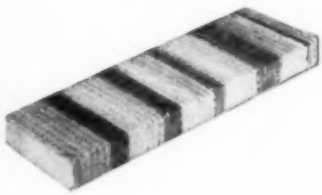
3510 E. LAFAYETTE • DETROIT 7, MICHIGAN

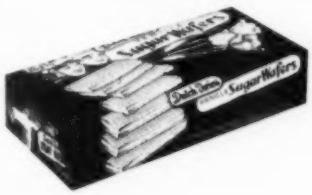
PLANT NO. 2—500 Bellevue, Detroit • PLANT NO. 3—Mancelona, Michigan

Export Office — 13 E. 40th St., New York City

SPECIALISTS IN PHARMACEUTICAL AND FILLING MACHINERY FOR 70 YEARS

Send for catalog of Filling Equipment

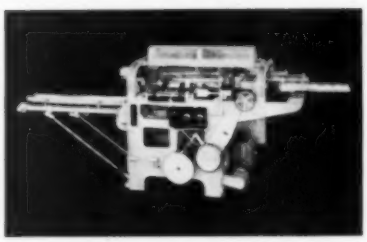




Which of these successful solutions fits your wrapping problem?

There is a wide range of products in a variety of shapes and sizes, that can be handled at higher speed, as a result of Battle Creek's ***"Continuous Flow"*** operation principle. And there is no crushing or breaking. Battle Creek machines can handle products in boats, cartons or flat cards . . . or loose. Battle Creek ***"Continuous Flow"*** machines use all types of wrapping materials, self-sealing Cellophane, wax papers, foils and other materials with equal ease. You will find the Battle Creek machine that you select will economically fit your operation to a "T" . . . yet is versatile enough to meet present or future changes in products or production methods.

write for complete illustrated catalog



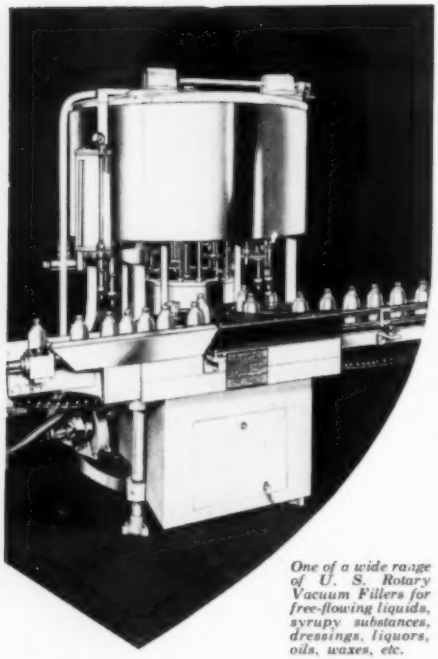
THE MODEL FW-35

Typical example of Battle Creek ***"Continuous Flow"*** versatility. The Model FW-35 handles packages ranging in size from 1½" to 5" wide, 2" to 10" long, and ¾" to 2½" high, at speeds up to 100 packages per minute. An intermittent stream of cartons can be fed from a previous packing conveyor without an operator. Boats, trays and cartons are all successfully wrapped by the Model FW-35.

BATTLE CREEK ***packaging machines, inc.***

800 MERRILL PARK

BATTLE CREEK, MICH.



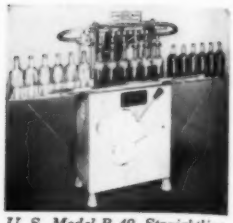
One of a wide range of U. S. Rotary Vacuum Fillers for free-flowing liquids, syrupy substances, dressings, liquors, oils, waxes, etc.

Leave Your Liquid Filling Problem to a Specialist...

Your production line requirements may be a problem to you but they are a-b-c to our staff of liquid filling specialists.

With a wide range of basic machine models, U. S. engineers custom-build each automatic filler to the specific needs of the user. Result, your plant is custom-equipped by specialists . . . at a cost competitive with standard equipment. Many years of day-in and day-out filling efficiency thereafter, justifies U. S. specialized engineering.

For quotations, state nature of product, containers used and production line capacity. "Rotary Filler Bulletin" describing basic mechanisms mailed upon request.



U. S. Model B-49, Straightline Vacuum Filler. Adjustable for all types of containers.

U. S. Model B-2 Semi-Automatic Vacuum Filler. Fast, portable. Filling is continuous.

U. S. Siphon Filler, Improved model. Stainless steel tubes, glass lined tank. Dependable.

U. S. BOTTLERS MACHINERY COMPANY

4013 North Rockwell Street — *Chicago 18, Illinois*

US

offices: Boston • New York • Philadelphia • Houston • Dallas • Denver • San Francisco • Los Angeles • Seattle • Portland • Phoenix • New Orleans • Tampa • Atlanta • Montreal • Toronto • Vancouver • Winnipeg • EXPORT OFFICE: Toledo, Ohio

---

New Line of

STAINLESS STEEL PAILS at Big Savings!

New Welded Construction Equals Seamless or Spun

Entirely stainless (no solder) — smooth surfaces — sturdy 24 gauge type 304 analysis stainless — improved shape for easier carrying, better balance — handles, ears, chimes of heavy-duty stainless. Outstanding quality at lowest cost. Backed by Metalsmiths' 30 years' serving process industries.

SEND YOUR ORDER TODAY
PROMPT SHIPMENT

LOWEST PRICES — BIGGEST SELECTION ON THE MARKET	
10 qt. -	$ 9.25 ea.
12 qt. -	10.25 ea.
14 qt. -	11.25 ea.
16 qt. -	12.25 ea.
20 qt. -	13.50 ea.

Discounts in quantity

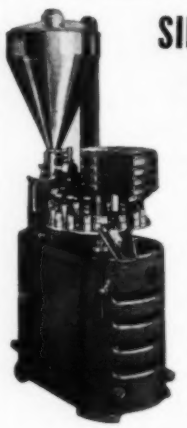
METALSMITHS

Division of **Orange Roller Bearing Co., Inc.**

568 White Street — Orange, N. J.

KALIX-DUPUY

AUTOMATIC TUBE FILLING, CLOSING & CRIMPING MACHINE



SIMPLICITY • LOWER PRICE IMMEDIATE DELIVERY

- ★ 120 Gross Daily—One Operator.
- ★ 15 Minutes to Change Size. Very low Change cost.
- ★ Quickly Cleaned — No Hose — Fills Tubes, Jars or Cans.
- ★ Accurate Fill—No drip—No smearing—No air.
- ★ Handles all metal tubes. Model RV-7 from ⅜" to 1½" diam. x 7½" high. RV-10 from 1" to 2½" diam. x 12" high.
- ★ Two-fold—Three-fold or Quadruple fold on RV-7. Two-fold or Three-fold on RV-10.
- ★ No tube—no fill. Coding jaws—Automatic Ejector.
- ★ Cap Tightener.
- ★ Stainless Steel Contact Parts.
- ★ Fully guaranteed — Replacement parts and service readily available.

COMPLETE SERVICE and PARTS FROM NEW YORK STOCK

•

WRITE FOR DESCRIPTIVE FOLDER AND PRICES

HARING EQUIPMENT Corp.

EXCLUSIVE KALIX-DUPUY DISTRIBUTOR

533 WEST BROADWAY, N. Y. 12 • GR 7-2217

Beautiful craftsmanship in the Matchabelli Crown bottle, in keeping with the traditional excellence of the perfume, calls for impeccable labeling — deftly accomplished by applying the label in the recessed base of the flask . . . a precision registry that calls for a

PONY LABELRITE® 534

NEW JERSEY MACHINE Corporation

AUTOMATIC LABELING • PACKAGING — PAPER BOX MACHINERY • MAKERS OF THE PONY LABELRITE

FACTORY SALES AND SERVICE BRANCHES
CHICAGO, CINCINNATI, LOS ANGELES

MAIN OFFICE & FACTORY: 1550 WILLOW AVENUE, HOBOKEN, N. J.

Animal Health

Veterinary Pancreatic Dornase

Dornavac, pancreatic dornase, was evaluated by W. B. Bixler (*Vet. Med.* 507, 1954) in a preliminary study for its efficacy in the treatment of mucopurulent pathologic conditions in both large and small animals.

In the treatment of mastitis, abscesses, sinusitis, and otitis, the enzyme reduced the viscosity of mucopurulent exudates, so that these inflammatory processes were removed readily.

By its debridement action, clinical improvement in the area of infection was noted since the enzyme facilitated better penetration of antibiotic or chemotherapeutic agents.

There was no observable indication of toxicity in any of the animals as a result of treatment.

Dornavac does not exhibit antibacterial activity and should be considered only an aid in the treatment of those conditions in which mucopurulent inflammatory processes are present.

ACTH and Bovine Ketosis

More than 180 field cases of bovine ketosis were studied by J. A. Rogers (*Journ. A.V.M.A.* 125:294, 1954), for the purpose of evaluating the comparative merits of adrenocorticotropic hormone and conventional glucose therapy. Conventional intravenous glucose therapy was used in the treatment of 75 cases; and the ACTH, in doses ranging from 120 to 600 I.U., was used intramuscularly in 100 cases. In seven cases, a combination of ACTH and glucose was employed. In all instances of delayed response, treatment was repeated as indicated.

Comparison of the response to the various therapeutic procedures indicated that recovery could be brought about with glucose alone, but the overall response was slower and less efficient than that obtained with ACTH.

In 60 per cent of the cases, complete recovery was obtained with a single injection of ACTH, but in the remaining 40 per cent, several injections were necessary. ACTH therapy, which combats but does not eliminate stress, will not produce a permanent or lasting effect if the stressing agent is not removed.

In most cases, ACTH alone seemed to be a more satisfactory treatment than glucose alone. The use of glucose with ACTH did not appreciably alter the recovery rate, except in isolated, stubborn cases. Such cases may respond to 500 cc. of 50 per cent dextrose and 180 units of ACTH given simultaneously.

In the work reported here, a dose of 120 to 180 units of ACTH appeared to provide a practical, efficient approach to the treatment of ketosis.

Ascariasis Treatment

Ascariasis is a problem, not only in large zoo mammals, but also in smaller species of animals and reptiles. Caricide (diethylcarbamazine dihydrogen citrate) has been shown to have a marked antiascarid effect in both dogs and cats in the laboratory, and extensive field use has confirmed its safety and efficacy. Recently, the successful treatment of ascariasis in some zoo animals, particularly tigers, lions, pumas, and pythons, has been reported.

Caricide has been used extensively according to K. L. Binkley (*Journ. A.V.M.A.* 1954, 408) among the larger caged animals at the Woodland Park Zoo. The desired results, without toxic reactions, have been achieved in obvious cases of ascarid infestation. No dietary preparation prior to administration nor laxatives or enemas after administration seem necessary. The use of caricide is now routine, especially in newly acquired zoo animals.

Bovine Uterine Sepsis Treated with Hibitane

The effective control of uterine infection in the bovine is one of the major problems in general veterinary practice. This clinical paper by J. McWilliam (*Vet. Rec.* 635, 1954) describes an assessment under field conditions of a new synthetic antibacterial compound 1:6-di - 4′ - chlorophenyldiguanidohexane (Hibitane).

Preliminary information on Hibitane has been published. Laboratory tests showed that even in the presence of blood, *Staph. aureus*, *Bact. coli*, *Ps. pyocyanea*, *Strep. pyogenes* and *Strep. faecalis* are rapidly killed by 1:1,000. Growth of these organisms is prevented by 1:10,000 to 1:800,000 of the drug and toxicity is very low indeed. Preliminary trials indicated a high degree of activity in the uterus and various formulations involving the use of almost insoluble salts to give prolonged action were tested. A formulation containing the compound in an effervescent base permitting its use as a pessary or as a suspension for use with a catheter was finally adopted.

The use of 1:6-di-4′-chlorophenyldiguanidohexane in preventing and treating uterine sepsis in over 360 bovines is described. The results indicate an improved control of infection over that obtained with penicillin and sulfonamides, and irrigation with iodine.

Hormone Growth Promotion

Feed supplemented with a combination of Terramycin and diethylstilbestrol gives better results in lambs than feed supplemented with oral diethylstilbestrol alone, Dr. Herbert G. Luther, director of the Pfizer Agricultural Research Division, reported to a recent meeting of the American Society of Animal Production.

Describing experiments with lambs, Dr. Luther stated that the combination of the antibiotic and the hormone increased the rate of growth over the hormone supplement by almost 20 per cent.

Lambs given neither Terramycin nor diethylstilbestrol gained weight at the rate of 0.22 pounds per day during the first six weeks of fattening while those whose feed contained the combination of the antibiotic and the hormone gained at the rate of 0.31 pounds daily or a difference of almost 30 per cent. Lambs on a feed containing oral diethylstilbestrol without Terramycin gained at a rate of 0.25 pounds per day.

The use of diethylstilbestrol in the feed of cattle gave a 35 per cent increase in the rate of gain over other feeds after 22 weeks of fattening.

All hormone treatments gave significantly better growth and improved feed efficiency over the control. In cattle trial feeding, 10 milligrams per steer

per day of diethylstilbestrol gave a gain of 2.17 pounds per day. Progesterone — diethylstilbestrol implants gave 2.08 pounds per day, and the control only 1.59 pounds daily.

Progesterone — estradiol and testosterone—estradiol implants were also evaluated and showed a similar type response. In terms of feed efficiency, the hormones reduced costs per unit of gain as much as 20 per cent.

The results of the cattle experiment, Dr. Luther pointed out, also indicate that oral diethylstilbestrol produces no undesirable effects. An important advantage to using the hormone orally for cattle is the ease with which the material can be supplied, by incorporating it in their feed.

Aureomycin for Calf Growth

Antibiotics profitably speed the growth of poultry and hogs, but their influence on the development of cattle is still under scientific investigation. New light on this question was shed at the Second Annual Symposium on Antibiotics sponsored by the Antibiotics Division of the Food and Drug Administration, by a report that calves receiving Aureomycin (chlortetracycline) made average daily gains of 19 per cent more than calves receiving no antibiotic.

L. L. Ruseff, H. H. Hester, Jr., and F. T. Landagora compared the growth of three sets of three calves: one group received oral Aureomycin every day from the age of four days to 16½ weeks; another group got weekly intramuscular injections of Aureomycin during the same age period; a third group served as control. The injected calves developed a higher concentration of Aureomycin in the urine and the bile than the calves receiving oral doses, but lower levels in the intestinal tract.

Nicarbazin

A highly effective new coccidiostat, nicarbazin, developed by Merck & Co., Inc. is recommended for continuous use in chicken feed to prevent outbreaks of both cecal and intestinal coccidiosis. Nicarbazin is an entirely new chemical entity, 4,4' - dinitrocarbanilide, 2 - hydroxy-4, 6-dimethylpyrimidine. It is not related chemically to sulfa drugs or other coccidiostats presently used in feeds.

Striking results have been obtained with nicarbazin in an extensive testing program. These include significant reduction of mortality and morbidity in flocks, as well as increases in weight and improvement in feed utilization, compared with controls untreated with nicarbazin. Testing has been conducted under controlled laboratory conditions, in "pilot" floor trials under simulated field conditions, and under actual commercial conditions. (*N. A. Vet.* 36:64, 1955).

Neomycin-Hydrocortisone Ointment

A neomycin-hydrocortisone ointment (neocortef) was applied in various ear, skin, and infected wound conditions of dogs and cats by H. L. Schultz (*Vet. Med.* 32, 1955). In the cited cases, infection and inflammation were adequately controlled, pruritus reduced, and healing enhanced. The preparation warrants further investigation in the field of animal medicine.

New Animal Growth Factor

A new substance produced by fermentation is reported to have increased the growth of swine and poultry even beyond the remarkable gains in animal nutrition previously achieved with antibiotics and Vitamin B_{12}.

Scientists at the Pfizer Agricultural Research and Development Division at Terre Haute, Indiana, told a recent meeting of the American Society of Animal Production that the unidentified substance—called *The Vigo Factor*—when added to a basic ration containing antibiotics produced up to 15 per cent greater gains in pigs than when the pigs were fed the best practical ration. Other scientists have also reported similar gains for chickens.

Almost four years of research went into developing a concentration of the factor which has proved that it can both reduce the time it takes to raise a pig or chicken and the amount of feed required.

In reporting the results of experiments with pigs, Dr. J. R. DeZeeuw told the meeting of the animal production society that a 15 to 20 per cent improvement in the average daily gain to market weight was experienced when *The Vigo Factor* supplemented a practical ration, which also contained Terramycin. Pigs averaged a gain of 1.75 pounds a day when fed a diet containing the factor as against 1.43 pounds on their former diet.

The work with the swine is paralleled by that reported in scientific papers on the use of *The Vigo Factor* in promoting the growth of chickens. When their basic diets were supplemented with the factor, the chickens at 4 weeks averaged 18 per cent greater gains in growth.

Experiments show that only a very small amount of *The Vigo Factor* concentrate is needed to supplement the diet.

Limited tests to date have not shown that *The Vigo Factor* will aid the rate of growth of ruminants.

Aureomycin to Increase Pig Litters

Sows fed aureomycin in their ration farrowed larger litters than sows not receiving aureomycin in an experiment at Iowa State College, according to Damon Catron, who is in charge of swine nutrition research at the college.

Also, Catron says, fewer pigs died during the first three days after farrowing when sows had been fed aureomycin. However, aureomycin feeding did not significantly affect the gestation results of gilts.

A similar study was made of sows receiving rations containing 14 and 20 per cent protein. There was no significant difference between the performance of the sows fed the two levels of protein.

Atabrine for Canine Tapeworms

Preliminary observations by R. P. Link and J. C. Smith (*J.A.V.M.A.*, 1954, p. 461) indicate atabrine may be effective in elimination of *Taenia pisiformis* and *Dipylidium caninum* from dogs. The dosage used was 10 mg. or 20 mg. per pound of body weight.

Atabrine caused expulsion of live tapeworms from all dogs treated. When autopsied, 10 (91 per cent) of the dogs infected with *T. pisiformis* were found to be completely free from tapeworms.

The mode of action of atabrine upon *T. pisiformis* and *D. caninum* was not studied. The worms soon became deeply stained with the drug after its administration. It appears to act more rapidly on these tapeworms than on *T. saginata* and *T. solium* in man and *H. fraterna* in mice. Dosage may influence the rapidity of action.

Further trials are necessary to determine optimum dosage and method of treatment. Culbertson found prolonged administration of the drug the procedure of choice in treating mice, while one treatment followed by sodium sulfate is recommended in man. The value of a laxative following atabrine in dogs remains to be established.

Compounder's Corner

Silicones in Dermatology and Cosmetics

The silicone fluids are characterized by little change in viscosity with variations of temperature, and excellent stability. They also possess little volatility even when exposed to temperatures of 150° C. (I. I. Lubowe, *Soc. Cosm. Chem.* Dec. 9, 1954).

They are clear, colorless fluids and usually are bland or tasteless. They possess excellent chemical and physical stability and are easily emulsified and there is no tendency toward rancidity. The low surface tension is helpful in the easy incorporation in pharmaceutical formulation.

The solubility of the silicone fluids vary with the chemical nature of the compound. Toxicological studies have demonstrated the innocuousness when applied topically on humans.

Tajkowsky and Reilly have suggested formulations of the silicones in various dermatological and cosmetic applications, as protective skin creams and lotions, baby creams and lotions, sun screening preparations, hair dressings, ointment bases, lip pomade, lipstick bases, and emollient creams.

The following methods are suggested for the laboratory and clinical evaluation of the protective action afforded by silicone preparations.

1. Hand washing tests.
2. Film stability tests.
3. Determination of protection against known allergens.
4. Radioisotope studies with Silicone C-14.
5. Clinical protection against contact dermatitis.

Various viscosities from 100 centistokes (cs) to 100,000 as were used in a water dispersable acid cream having a pH of 5.0. The silicones were emulsified with Tween 60. Various concentrations were used to determine the effectiveness as protectants by patients who demonstrated a contact dermatitis either to water, soap, detergents, or chemicals.

Studies have been initiated to demonstrate the effectiveness of the above silicone formulations against known eczematous allergens. The silicone formulations have good protective action in the prevention of the reoccurrence of dermatitis venenata due to soap, detergents, and occupational contactants.

Chelating Agents

Chelating agents are compounds, both organic and inorganic in nature, which are capable of forming complexes with metal ions in which the metal ion is bound in a cyclic or ring structure according to A. E. Frost (*Manuf. Chem.* 1954, 473). The condensed polyphosphates are the best known and most widely used of the inorganic chelating agents. Although many organic chelating agents are known, only the polyhydroxycarboxylic acids (citric acid, gluconic acid, tartaric acid) and the synthetic aminocarboxylic acids are of importance from an economical standpoint. This latter group of compounds, of which the polyaminopolycarboxylic acid, ethylenediaminetetraacetic acid, is the prototype, will be discussed below.

By addition of a sufficient quantity of chelating agent to a liquid soap or shampoo, it is possible to eliminate completely the effects of hard water salts and metal impurities introduced via raw materials and processing equipment and to obtain a sparkling clear liquid of excellent shelf-life, stable against rancidity, color formation, and precipitation of insoluble soaps.

The addition of more chelating agent than is necessary to produce clarification and resistance to clouding produces a liquid soap or shampoo which will perform effectively on dilution with hard water.

In the cosmetic industry, lotions, ointments, hair tonics, creams and deodorants are stabilized against metal catalyzed oxidation which causes rancidity, color formation and precipitation by the addition of a small amount of a chelating agent (0.01 to 0.03 per cent dry weight basis). Products thus stabilized possess excellent shelf-life and retain their original texture. EDTA, when used in such low concentrations, has been demonstrated to be non-irritating to the skin.

Traces of metal ions are known to accelerate the deterioration of various drugs and drug formulations. The same properties that enable EDTA to inactivate and "effectively remove" metal ions in hard water also find successful application in the stabilization of pharmaceutical products. Terramycin and solutions of crystalline penicillin are stabilized by EDTA due to the inactivation of traces of heavy metal ions. The preparation of stable solutions having a high calcium content is also accomplished by the use of EDTA, as is the stabilization of formaldehyde.

Bentonite in Emulsions

In a preliminary study on a number of cream bases A. Axon (*J. Pharm. Pharmacol.* vol. 6, p. 830, 1954) found that the addition of a small amount of bentonite to the formula made it possible for these emulsions to be sterilized by autoclaving without creaming or separation of the oil phase (*Pharm. J.*, 1946, 157, 377; *ibid.*, 1947, 159, 135). The autoclaved emulsions, with and without bentonite, differed markedly, however, in physical appearance and in consistency. An attempt has been made in this paper to assess the observed difference quantitatively and to present a technique of general application for the determination of the consistency of semi-solid preparations of pharmaceutical interest.

The instrument used was a rotational viscometer fitted with a variable speed drive which made it possible for two complete viscosity curves to be determined in three minutes. A curve is obtained in which rate of shear and torque are calculated from the dimensions of the instrument and are expressed in basic fundamental units which are independent of the instrument and of the observer. Briefly, the viscosity curve consists of an upcurve showing the effect of the increasing rates of shear and a downcurve to retrace the path as the rate of shear is reduced. The upcurve was obtained by plotting the deflection at each point when the speed of the cup was increased step by step. At 100 r.p.m. and 200 r.p.m. the speed of the cup was decreased and the deflections again reported. The changes were made without stopping the rotation of the cup

Tibetogene
by Albert Verley and Company
New Oriental accent... frankly animal... subtly persistent
TURN THE PAGE

Tibetogene by Albert Verley and Company

—a new intensifier of especial significance, now that natural musk is virtually unobtainable

$50 a pound for 100% strength

TIBETOGENE is a worthy addition to the group of Albert Verley and Company specialties which has played a part in so many outstanding successes. Its versatility gives you wide creative latitude.

A tincture of as low as 5% strength gives a lift to almost any fragrance — adds new sparkle to sweet, Oriental, and heavy compositions. Because a little Tibetogene goes a long way, costs stay within practical limits.

Let us send you a working sample of Tibetogene, so that you can see its interesting possibilities for yourself. Write today.

ALBERT VERLEY and CO.
114-116 East 25th St.
New York 10, N. Y.
1018-24 S. Wabash Ave.
Chicago 5, Ill.

MEFFORD CHEMICAL CO.
1026 Santa Fe Ave.
Los Angeles 21, Calif.

ALBERT VERLEY and CO.
222 Front St., East
Toronto, Ontario

Representatives in all principal cities throughout the world

Where Your Dollars Have More Scents

Albert Verley

AND COMPANY

Headquarters for Fragrance Appeal

Synthetic Aromatic Products and Organic Isolates
Synthetic Flower Oils and Aromatic Bases • Bouquets and Finished Compositions

and were spaced as evenly as possible both in regard to speed of the cup and time interval. Emulsions containing liquid paraffin, emulsifying wax, distilled water, with and without two per cent of bentonite, were prepared by three different methods and subjected to heat treatment. Viscosity determinations were made at 25° C. Those creams without bentonite showed shear-rate thinning both before and after autoclaving. A change in type of viscosity from shear-rate thinning to uniform plastic flow occurred when an emulsion containing bentonite was autoclaved. The entire viscosity curve was necessary to characterize shear-rate thinning, whereas uniform plastic flow could be characterized by two factors: "plastic viscosity" and yield value.

Stability of Ferrous Gluconate Solutions

A number of elixirs were prepared by C. A. Johnson and J. A. Thomas (*Chemist and Druggist*, 1954, p. 404) according to different formulas and stored in well-closed amber-glass containers varying from 20 to 40 fl. oz. in size, the ferrous iron content being determined from time to time. The preparations at first showed a steady deterioration in ferrous iron content. The volume of air in the container was of prime importance in determining the extent to which oxidation would occur.

The effect of storage in daylight was also examined. The results show that, after an initial oxidation, the ferric iron became reduced, the ferrous iron content increasing beyond what was originally present until it approximated to the total iron content. The reduction was accompanied in the smaller volumes by the deposition of a brownish-yellow crystalline precipitate.

The traditional antioxidants associated with ferrous iron formulation are shown to exert little or no effect in preventing the oxidation of ferrous gluconate. A solution buffered to *p*H 4.5 with citric acid and sodium citrate showed just as rapid a deterioration as an unbuffered solution.

The concentration of iron in the solution affects the extent to which oxidation will proceed. The proportion of total iron converted to the ferric state increases as the concentration of total iron is decreased. Provided that the solution is kept in a well-filled and sealed container, no significant deterioration of ferrous iron content may be expected within three months. The period may well be much longer.

The effect of light in arresting and ultimately reversing the oxidation of ferrous to ferric iron in solutions of ferrous gluconate has been confirmed.

It is concluded that solutions of ferrous gluconate should be dispensed only in completely filled containers of small size; the maximum concentration of ferrous gluconate compatible with the formation of a stable solution should be employed—10 per cent is suggested as a suitable figure; a suitable flavoring agent consists of about 20 per cent of syrup of orange together with 0.3 per cent of citric acid; if the solution is to be stored protected from light a small proportion of dextrose monohydrate—say 7.5 per cent—should be included. If storage in the light is considered to be safe the proportion of dextrose should be increased to 20 per cent.

Disinfecting Powders with Formaldehyde

The possibility of sterilizing powders by means of bactericidal gases has been investigated by K. Bullock and E. A. Rawlins. They prepared a powder of kaolin containing spores of *B. subtilis*, and exposed it to formaldehyde vapor under a variety of conditions. An apparatus was specially designed so that the concentration of formaldehyde and its rate of flow through the powder could be varied independently of each other. It was thus possible to determine the effect on bactericidal power of both the concentration and the total amount of formaldehyde used.

It was found that the death-rate of the spores was a function of the amount of formaldehyde permeating the powder in unit time rather than of concentration of disinfectant in the vapor phase.

Experiments were also carried out to determine the effect of the relative humidity of the atmosphere on disinfection. It was found that as the relative humidity decreased from 98 per cent, the spore death-rate showed a marked fall: the authors believe that at humidities below 65 per cent, formaldehyde is not an effective aerial disinfectant at room temperature.

The effect of temperature on the rate of disinfection was assessed by enclosing the chamber containing the powder in an air oven at 58° C. The results, when compared with results from a similar experiment conducted at 21° C., showed a significantly higher death-rate at the higher temperature.

In discussing possible applications of their work, Bullock and Rawlins point out that formaldehyde has several disadvantages (e.g. the ease with which it is inactivated, its irritant nature) to its practical use as a disinfectant.

However, as they have shown that powders can be evenly penetrated by gases, and can be sterilized in a relatively short time at high temperatures, the authors are now working on the problem of finding a gas which possesses the efficiency of formaldehyde without its disadvantages.

Stability of Succinylcholine

Succinylcholine owes its clinical value as a short-acting muscle relaxant to the fact that it is rapidly hydrolyzed by the pseudo-cholinesterase of the serum. The possibility that hydrolysis may also occur, at a slower rate, when injection solutions of succinylcholine are stored has been the subject of research carried out over the past two years by M. P. Earles *et al.* (*The Alchemist*, Oct. 1954, p. 501).

Throughout their investigations the workers used an injection containing:—

Succinylcholine chloride 50 g.
Water for injection to . . . 1000 ml.

and in most of the tests this was contained in 10 ml. multidose vials, 0.1 per cent chlorocresol being added as a preservative.

The results of testing showed that injection of succinylcholine chloride deteriorates on storage, the rate of deterioration increasing as the temperature rises. The rate of hydrolysis was the same whether the injection was stored in sealed ampoules or rubber-capped vials.

Ultrasonics in Pharmacy

J. P. Hall (*J. Pharm. & Pharmacol.*, 1954, 6, 577-589) reviews literature from 81 sources relating to the subject. Ultrasound could be used to decrease the time of extraction processes, to sterilize injections and surgical instruments, to break down complex plant constituents without the addition of reagents for the purpose of the elucidation of their structure. They may also be suitable for the investigation of thixotropic substances and gels. The identification of liquids by the measurement of the velocity of ultrasound propagated in them is already possible. The measurement of absorption may be used and the technique can be applied to the differentiation of chemical isomers. The velocity of ultrasound in a mixture of liquids depends on the exact composition of the mixture and this is a pointer to the automatic control of reactions in a continuous system.

Insure the excellence of your cosmetic products!

SONNEBORN CARNATION WHITE MINERAL OIL NOW FORTIFIED WITH VITAMIN E

. . . . . for ✓ *exceptional purity!*
✓ *excellent stability!*
✓ *outstanding odor and color resistance!*
✓ *longer shelf life!*

Creams, hair oils, hair dressings, permanent wave lotions... whatever your cosmetic product... the White Oil you use should be fortified with Vitamin E to assure greatest stability against odor and color development. Now Sonneborn Research Laboratories have developed and patented a Vitamin E-fortified white oil—CARNATION White Mineral Oil—to help make your finished product better... keep it factory fresh.

Give your cosmetic product the stability, the superior shelf life, the greater customer satisfaction—which CARNATION White Oil can help assure.

Why take chances when protection costs no more! Insist on Sonneborn CARNATION White Oil fortified with Vitamin E!

Achieved by **Sonneborn** RESEARCH

L. SONNEBORN SONS, INC.
New York 10, N. Y.

SYNTOMATIC CORPORATION

AROMATICS · ESSENTIAL OILS · PERFUMERS MATERIALS

AROMATICS

ESSENTIAL OILS

PERFUMERS MATERIALS

Syntara

Ever hear the phrase, "How about something different . . . something fresh . . . something with a new note in perfume appeal?"

We've heard it often. There is no one answer . . . but one of the answers is Syntara . . .

SYNTOMATIC CORPORATION

114 EAST 32nd STREET • NEW YORK 16, N. Y. • MURRAY HILL 3-7618

New triple pressed stearic acid from Armour

NEO-FAT® 18-55 STABILITY GIVES YOUR PRODUCTS EXTRA LIFE!

They'll look fresher!

Neo-Fat 18-55 in your finished product means long product life with *no color change!* Unlike ordinary stearic acids, Neo-Fat 18-55 will not turn yellow—even under extended time in storage, high temperature processing and long product life! It was produced by Armour's patented low temperature solvent crystallization process which guarantees a material with color stability *built in!* Chemical ester and concentrated acid tests, as well as severe field tests, have proved that Neo-Fat 18-55 keeps products from changing color—keeps them looking fresher!

They'll smell fresher!

Neo-Fat 18-55 will resist odor-causing rancidity longer than the stearic acid you are now using! The best proof of that is the Tennessee Eastman test—acids are heated for 2 hours at 200° C. and the lightest final color indicates the greatest resistance to rancidity. Of seven competitive acids tested, Neo-Fat 18-55 was found to have by far the lightest color—Lovibond 5¼", 1.1R—5Y!

They'll stay fresher!

Neo-Fat 18-55 resists oxidation and breakdown longer than ordinary stearic acids! Its peroxide index—measuring the amount of oxygen that has combined or reacted with the fatty acid—is only 0.1!

Send today for samples of Neo-Fat 18-55—the finest triple pressed stearic acid you can buy. Send for samples of Armour's economical double and single pressed stearics, too. Test them all against the raw materials you're now using. You'll choose Armour Neo-Fats to make your products look fresher, smell fresher, stay fresher!

MAIL THIS COUPON TODAY

ARMOUR CHEMICAL DIVISION
1355 West 31st Street, Chicago 9, Illinois

Please send me samples of:

☐ Neo-Fat 18-55 (Triple pressed) ☐ Neo-Fat 18-54 (Double pressed)
☐ Neo-Fat 18-33 (Single pressed)

Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

D 2

ARMOUR CHEMICAL DIVISION

©ARMOUR AND COMPANY

1355 WEST 31ST STREET, CHICAGO 9, ILLINOIS

Advancing Therapy

Influenza Vaccine

A statement recently issued by the British Ministry of Health says that encouraging results from a large-scale field trial of an influenza vaccine containing a virus A strain (FM) and the "Liverpool" strain, that was conducted during the period 1952-53 by the Committee on Clinical Trials of Influenza Vaccine (*Pharm. J.*, 1953, 117, 492) have prompted the Committee to go forward in the search for still more efficient vaccines.

In view of favorable reports received from the U. S. of the increased antigenic value of the oil-adjuvant as distinct from the saline kind of vaccine, a comparative serological trial was commenced in December, 1953, in groups of volunteer students in certain London hospitals and in Manchester and Sheffield. The trial is now almost complete, and has demonstrated the much greater efficiency of the oil adjuvant vaccine in antibody production in the first six months after inoculation, compared with the saline vaccines. Reactions, local or general, from the oil adjuvant vaccines have been almost negligible, and even less than those experienced with the saline vaccine.

Active Constituents of Raspberry Leaves

Raspberry-leaf tea is claimed to be an efficient substitute for ergot and has also been used in treating severe dysmenorrhoea. Workers at Chelsea Polytechnic are trying to find out whether there is any pharmacological basis for the popular use of raspberry-leaf infusion.

A preliminary investigation into the active constituents of raspberry leaves was described by A. H. Beckett, F. W. Belthle, K. R. Fell and M. F. Lockett (*J. Pharm. Pharmacol.*, Vol. 6, 1954). Dried leaves from a cultivated crop of *Rubus idoeus* (var. Malling Promise) were their raw material. They found that organic solvents gave inactive extracts, but extracts obtained by evaporating aqueous infusions under reduced pressure were found to be pharmacologically active, with a number of different actions tending to mask each other.

Further separation processes showed that the active constituents include:

A smooth-muscle stimulant which, when injected into mice, acts as a central-nervous stimulant and a cardiovascular toxin.

An anticholinesterase which inhibits pseudo-cholinesterases more powerfully than true cholinesterases.

A "spasmolytic" which relaxes isolated tissues and has muscarine-like and nicotine-like actions in the whole animal.

This third spasmolytic constituent antagonizes the stimulant actions of the other two so that the actual effect of a particular partially purified extract depends upon the relative proportions of the ingredients, which in turn depend upon the purification methods used. The mean effect of crude raspberry-leaf extracts was found to be stimulation of isolated tissues despite the presence of a powerful "spasmolytic."

When the "spasmolytic" was separated out, the remaining fractions were found to stimulate uterine muscle more powerfully than smooth muscle. The authors think there may be present another stimulant which exhibits this more selective action.

In the light of the mutually antagonistic actions of the actual constituents the authors find it hard to assess the traditional use of raspberry-leaf infusions, particularly since they are taken before as well as during confinement. The secret may be revealed when present work towards complete isolation of the various active constituents has been completed.

Aspirin for Pruritis

Since itching is now known to be a "weak pain" like a mild headache or toothache, aspirin is the most effective internal medication for relieving an itch sensation, according to Dr. Walter C. Lobitz, Jr. in the *New England Journal of Medicine* (14:251, 1954).

Emphasizing that the itch sensation is only present when pain is present, the author says control of itching should be as exact a science as the control of pain. "It has been shown that none of the local anesthetics or anti-histaminics, when applied locally, penetrate the intact normal or injured skin sufficiently to alter the pain on its threshold." Fifty-four topical anti-pruritic preparations commonly prescribed were found to have no effect on experimentally produced histamine pruritus in man, he reports.

Dr. Lobitz characterizes scratching as an attempt to convert the "intolerable weak pain" to a strong pain that can be endured. Thus, a pain-relieving drug like aspirin will kill the weak pain and prevent scratching, which, the author points out, "spread the itch sensation out in waves from the initial site."

Colchicum Autumnale and Joint Disease

Fifteen patients, 65 to 85 years of age, with chronic disease of the joints were treated by S. Rizzente (*Minerva med.* 45:1784, 1954) with "colchicoside," a derivative of Colchicum autumnale. From the pharmacological standpoint, the action of this drug is like that of colchicine, but it is much less toxic and a therapeutic dosage 50 times larger than that of colchicine can be used. Pain was marked in all these patients, and active and passive immobility was present in all. Previous therapy had been of no avail. A dosage of 5 to 10 mg. of the preparation was given intravenously for five to 15 day courses with an interval of 50 days between. Administration of the drug had to be discontinued in two patients because of a marked gastric disturbance. The effect on pain and motility was good in 11 patients, and in 10 of these the general condition and well being were improved. Because of the good effects of the preparation on pain and motility and the absence of side-effects, Rizzente recommends this drug for further clinical trial in patients with chronic disease of the joints.

LSD in Psychiatric Treatment

Sandison, Spencer, and Whitelaw have used *d*-lysergic acid diethylamide (LSD) in the treatment of psychiatric patients (*J. Ment. Sci.* 96:491-595, 1954). This drug induces psychic states in which the subject becomes aware of repressed memories and other unconscious material in a setting of clear consciousness. The authors describe the results obtained with the therapeutic use of the drug in 36 psychoneurotic patients over a period of a year; they consider that it will find a place in the treatment of the psychoneuroses and allied mental illnesses.

Tongue-Tingling "FLAVOR APPEAL"

The successful proprietary or pharmaceutical specialty must have it! When the taste-buds favor the flavor, the chance for continued use of the preparation by the consumer is materially stepped up.

Whether it's *liquids,*

powders,

or tablets, you can depend on PENICK OPTIMO IMITATION FLAVORS. Their taste-appeal is close to Nature's own. Of quality-selected raw materials they are laboratory-controlled at every step of manufacture. Compatibility with other ingredients, penetration power, stability at varying temperatures and shelf-life are other assets of OPTIMO FLAVORS.

May we send you our latest flavor catalogue?

Basic Products for the Pharmaceutical Industry

S. B. PENICK & COMPANY

50 Church Street, New York 8, N. Y. Telephone COrtlandt 7-1970
735 West Division Street, Chicago 10, Ill. Telephone MOhawk 4-5651

Speculating on the mode of action of *d*-lysergic acid diethylamide, the authors consider that it primarily disturbs the unconscious, and that subsequent phenomena depend on the result of the action of the unconscious or consciousness, so that they are bound to vary from patient to patient. Eight-hydroxytryptamine (serotonin), which occurs in the brain, is inhibited by the drug and it is interesting to speculate that the striking mental changes caused by the drug might result from its acting in the brain as an antimetabolite, blocking the action of serotonin, but the function of the latter is unknown at present. The material produced under the influence of the drug therapy bears a striking similarity to the dream and fantasy material of patients undergoing deep analysis. The authors are convinced that the drug, used as an adjunct to skilled psychotherapy, is of great value in the treatment of obsessional and anxiety conditions accompanied by mental tension.

Dysentery Treatment

A new drug that shows promise of curing both amebic dysentery and the non-dysentery form of the disease was announced in Detroit and reported in *Science News Letter*.

The drug was first synthesized in the World War II search for new antimalaria drugs by Frank H. Tendick of Parke, Davis and Company, Detroit. About four years ago Drs. Paul E. Thompson and Alexander M. Moore discovered its antiamebic activity.

Success with the drug, called Camoform, in treating patients is now rereported by Dr. Horacio Barrios of Iquitos, Peru, and Dr. J. Maria Bustamante y Rivero of Arequipa, Peru.

Dr. Barrios reports that in his controlled and followed-up study of 20 amebic dysentery patients treated with Camoform "all were cleared of infection." Acute symptoms, such as abdominal pain, fever and diarrhea, were "rapidly controlled, most of them two days after treatment began."

The physician pointed out that one patient had been sick and suffered relapses for two years before undergoing Camoform therapy. Twenty-two days of treatment cleared up the ameba, and the patient continued negative at the five-month follow-up.

Dr. Bustamante said 82 out of 85 Camoform-treated patients with acute amebic colitis were negative between the sixth and 15th days after therapy had begun.

He added that even in the three remaining cases a clinical cure was obtained, and only the laboratory showed the presence of amebas.

Dr. Bustamante also reported Camoform was effective in the treatment of chronic carriers of ameba.

Camoform is an organic compound and does not contain arsenic or other toxic heavy metals. It is given by mouth and because it tends to remain in the tissues for long periods it may have preventive action against amebic infections.

Sitosterol vs. Cholesterol

Beta-sitosterol, one of the most widely distributed plant sterols, was administered orally in doses of 5 to 6 gm. by M. M. Best et al. (*Circulation* 10-201, 1954) immediately before the ingestion of food to nine patients on an unrestricted diet, seven of whom were hypercholesterolemic, while two had serum cholesterol levels within the normal range. The patients were studied for from 13 to 29 weeks, were seen at weekly intervals, their weight recorded, and determinations of serum total cholesterol levels made. A significant reduction of serum total cholesterol occurred, and a lowering of the ratio of serum total cholesterol to lipid phosphorus was observed. The reduction was largely due to the change in cholesterol, since lipid phosphorus was not constantly altered. A reduction in the "atherogenic" S_f 10-100 classes of lipoproteins was observed in three persons whose serums were studied by the analytic ultracentrifuge. Toxic or unpleasant side-effects were not observed in the patients who were given sitosterol. Betasitosterol, by interfering with the absorption of dietary cholesterol and with the reabsorption of that excreted into the gastrointestinal tract, offers a means of studying the effects of a sustained lowering of serum cholesterol in atherosclerotic states.

Khellin Synergism

Synergism was observed between khellin and barbiturate by K. Mezey et al. (*Anales soc. biol. Bogota* 5:124). Khellin shortened the interval before the hypnotic effect of the barbiturate appeared. Khellin relaxed smooth muscle in concn. of 1:150,000 and inhibited the spasm due to barium chloride. Its antispasmodic effect was reinforced by small doses of papaverine. Therapeutic doses of khellin are not hypotensive in the dog but, if they are combined with a barbiturate and papaverine, a sustained hypotensive action is obtained.

Undi Oil

Since ancient times some of the vegetable oils like Neem (*Azadirachta indica*), Undi (*Calophyllum inophyllum* Linn.), Karanja (*Pongamia glabra* Vent.), Malkanguni (*Celastrus paniculatus Willd.*) etc., have been used in certain human ailments especially against, skin affections. In studies by S. G. Bhat, J. G. Kane and A. Sreenivasan (*Journ. Am. Pharm. Assoc. Sci. Ed.* 43: 543, 1954) on testing of these oils *in vitro* for antibacterial activity, Undi oil showed marked activity against Gram-positive organisms.

Undi oil obtained by different methods of extraction showed antibacterial activity of the same order.

The active principle was stable to autoclaving and at room temperature for one month in the form of emulsion. It could be completely extracted by 90 per cent v/v ethyl alcohol. The activity of the extract was 14 times that of the original oil against *M. aureus* by the agar cup plate method.

The separation of the active principle was studied by molecular distillation and chromatography. Maximum activity was shown by a fraction adsorbed on alumina and eluted with chloroform.

The chromatographically separated fraction has been characterized from its ultraviolet absorption.

Thyroid and Trichomonas

The studies described by E. G. M. Krieg (*J. Mich. Med. Soc.* 53:749, 1954) were begun after a study of 198 patients who had a lowered basal metabolic rate that simulated a surgical syndrome. In this group there were 10 women with trichomonas vaginalis vaginitis who were relieved of symptoms by the administration of desiccated thyroid, and subsequent hanging-drop investigations showed a disappearance of the protozoan. In a subsequent series of 40 cases, no local treatment was given except in four instances when the local irritation was unbearable. This group of patients was observed for periods up to 48 months, and there was no recurrence of the trichomonas infestation except in six cases in which thyroid therapy was discontinued against advice. Reinstitution of therapy provided relief for these six patients. The amount of desiccated thyroid administered varied from 0.5 to 4 grains (0.03 to 0.25 gm.) daily, and the amount was determined empirically in slowly increasing dosage. The majority of patients required 2 grains (0.13 gm.) daily. Relief was obtained in four to 12 weeks.

Perfumer's Shelf

Storing Sweet Orange Oil

H. T. Islip and W. S. A. Matthews, writing in *Colonial Plant and Animal Products*, vol. 4, p. 35 (1954) report that for most essential oils the best conditions of storage are in full, sealed containers, in a cool place and protected from light. In the case of citrus oils, good storage is of major importance as these oils are particularly liable to develop off-flavor if stored under unsatisfactory conditions.

The investigation has showed that, after storage for six months in a refrigerator at a temperature of 4° to 5° C., orange oils of the 1951 and 1952 crops had constants which were in good agreement with those of the original oils and little, if any, impairment of quality had taken place.

Storage at room temperature in the dark affords insufficient protection to prevent some slight deterioration in the quality of the oils. This deterioration was more marked in the case of the half-full bottles of oil stored under these conditions. The amount of non-volatile matter in the oils in the half-full bottles was above the *British Pharmaceutical Codex* maximum given.

All the oils stored in a north light and a south light at room temperature possessed a decided terebinthine flavor. Fairly rapid deterioration in these samples was confirmed by marked variations in their analytical constants when compared with those obtained for the original oils. In this connection it will be noted that the amounts of non-volatile matter present provide the best indications of changes in the quality of the oil.

The presence of air, as was the case with the oil in half-full bottles, increased the tendency of the oil to deteriorate: where deviations of the analytical constants from those of the original oil were detected these were greater in the half-full bottles than in the corresponding full bottles of oil.

Of the three conditions of storage normally recognized as desirable, low temperature, absence of air and absence of light, the most important is temperature. The indications are that if orange oil is to be stored for any length of time, this storage should be at as low a temperature as possible, as well as in the absence of air and in the dark. Four degrees to 5° C. was satisfactory in the case of the present samples over a period of six months and this might prove so for longer periods.

Perfuming Shampoos

Quite a few raw materials are used in shampoos according to "*The Giraudanian*" (October, 1954), which require particular odor attention when a perfume is prepared. Many drastic odor problems must be solved when working with the synthetic detergent shampoos and similarly the fatty acids used in the soap shampoos may also create a coverage problem. This is particularly true if oleic acid is involved, but becomes more simple when such raw materials as stearic and myristic acids are used. The perfumer must also be familiar with the quaternary ammonium compounds used in some of today's shampoos especially since they may have some deleterious effects on a perfume composition.

Insofar as the odor type is concerned, it may vary depending on the type of shampoo involved. Clean, fresh bouquets are popular as are rose, lilac, lavender and lily-of-the-valley scents. In discussing perfumes for shampoos, Poucher mentioned: "Oils such as lavender, rosemary, and rose geranium are much employed" and Harry stated that various essential oils such as lavender and rosemary, as well as eau-de-cologne might be used as a perfume. For coconut oil shampoos, Poucher said: "It is now perfumed with any of the stable synthetics such as linalol, terpineol, methyl acetophenone, etc., or such oils as lavender and rosemary."

In addition to odor coverage, there are a number of other problems. For shampoos of the soap and soapless types, clear liquids, liquid creams and cream shampoos, all of various pH, the perfumer must consider the problems of perfume solubility, discoloration and stability.

Solubility is an important factor when perfuming shampoos due to their high water content. In synthetic detergent shampoos, perfume oils are usually sufficiently soluble. If, however, the concentration of perfume is rather high to overcome any inherent odor, the solubility problem thus caused can be overcome by the use of proper solubilizers.

Stability is always important and must be carefully considered. A nonstable perfume would result in shelf-losses to the producer and cause the loss of consumer interest. In order to assure the use of stable fragrances, the manufacturer should conduct extensive shelf tests to guarantee proper stability for long periods of time.

Discoloration must be given particular attention when perfuming clear type and emulsion type shampoos, and it must be kept in mind when the other types are involved as well. White cream shampoos and those which are colored only with light soluble colors are subject to discoloration.

The question of concentration, which is important regardless of the cosmetic being discussed, is even more important for shampoos because of the dilution of the product upon application. This dilution amounts to a minimum of 10 per cent. Depending upon the type of shampoo involved and, of course, the fragrance selected, the concentrations of perfume vary from 0.1 per cent to one per cent. This also depends on the degree of masking which is required before a satisfactory result is obtained.

The shampoos must have a pleasant odor not only while in the bottle, tube or aerosol but after they are applied to hair as well. It is not good economy to use just enough perfume to cover the odor of the raw materials; many users want to notice the scent of the perfume while the shampoo is being diluted and, therefore, taking into consideration all other factors, the perfume concentration most commonly used is one-half of one per cent.

There is normally little difficulty encountered when perfuming the solid and liquid cream shampoos. The concentra-

TOP NOTES by Fritzsche

FRITZSCHE BROTHERS, INC.

FRITZSCHE BROTHERS, INC.

A THOUGHT for the Month

"Great minds have purposes, others have wishes. Little minds are tamed and subdued by misfortune; but great minds rise above them."

—WASHINGTON IRVING

FLOWER of the Month

January—Carnation
or Snowdrop

February—Violet
or Primrose

MAYBE YOU KNOW HIM . . .

ONLY within the memories of its very oldest employees was there ever a time when Fritzsche Brothers did not have on its sales roster a representative of the McNamara clan. Today, warm, witty, unforgettable Jim is enjoying his well earned retirement after 34 years of Fritzsche service, while FRANK McNAMARA, no kin to Jim, but young, eager and perhaps presently a bit awed by the illustrious record of his predecessor, works hard to maintain the reputation our industry attaches to his name. Frank was born and reared in Brooklyn, N. Y. and educated there in its public schools and at Fordham University where he received his B.S. in chemistry. Shortly thereafter he devoted 2 years of service to the U. S. Chemical Corps as a toxic gas specialist. While stationed in France in this capacity, he gained a wholesome respect for these lethal concoctions when on numerous occasions his duties required the transfer of deadly mustard and chlorine gases from large containers to smaller ones. Completing his obligations to Uncle Sam, he returned to the United States and took temporary employment to get practical sales experience before coming to Fritzsche Brothers. Now, as a regular member of its staff, Frank is working assiduously to fulfill his destiny and reputation as a McNamara. Outdoor activities have occupied much of Frank's spare time—golf, tennis, swimming, softball—but since his recent change of status his interests have abruptly shifted—and understandably, of course—to Ann, his very lovely bride of 2 months.

RECOMMENDATION of the Month

Mousse Cinderel

Like Cinderella adorned in the raiment of a princess, your less expensive perfume will take on an aura of enhanced richness and fragrant beauty with MOUSSE CINDEREL added to its composition. In addition to its outstanding fixative properties, this delightful and very original specialty lends a well rounded finish, characterized by sweetness, warmth, stability and depth. To improve the perfume quality of your composition, add MOUSSE CINDEREL at $17.00 per lb.; $1.25 per trial ounce. You'll revel in such loveliness at such a modest cost!

INSPI

Of all people selected fragra to match the *everywhere.*

DELISSE BOUQUET . . $15.0

Attractive, light, diffusive, lo floral, initially a lily of the which, upon drying, becomes definable bouquet of lasting and appeal.

FLORAL BOUQUET . . $20.0

A modern fresh, floral fragra delicate character and with u tonal qualities, harmoniously b with amber, balsamic and notes, possessing exceptional te This is an intriguing Parisian in a modern vein and discreet gant in tone.

CREATORS of MADE-TO-ORDER FRAGRANCES for PERFUMES, TOILETRIES and COSMETICS

•

ODORANTS and DEODORANTS for INDUSTRIAL and TECHNICAL USE

•

SUPPLIERS of AROMATIC CHEMICALS, BASIC PERFUME and FLAVOR RAW MATERIALS

•

FRITZSCHE Established 1871 **Brothers, Inc.**

PORT AUTHORITY BUILDING, 76 NINTH AVENUE, NEW YORK 11, N. Y.

BRANCH OFFICES and *STOCKS: Atlanta, Georgia, Boston, Massachusetts, *Chicago, Illinois, Cincinnati, Ohio, Cleveland, Ohio, *Los Angeles, California, Philadelphia, Pennsylvania, San Francisco, California, St. Louis, Missouri, *Toronto, Canada and *Mexico, D. F. FACTORY: Clifton, N. J.

THOUGHT for the Month

Great minds have purposes, others wishes. Little minds are tamed and subdued by misfortune; but great minds rise above them."

—WASHINGTON IRVING

Good Scent

FOR PERFUMERS

INSPIRATIONS FOR MOTHER'S DAY

Of all people, Mothers deserve the best—and for *her* Day, *every* day, these selected fragrance specialties are particularly appropriate—soft, gentle fragrances to match the tender beauty that abides within the heart of every mother . . . *everywhere.*

DELISSE BOUQUET . . $15.00 lb.

Attractive, light, diffusive, low cost floral, initially a lily of the valley which, upon drying, becomes an indefinable bouquet of lasting beauty and appeal.

FRENCH AIRE . . . . . $35.00 lb.

A warm, caressing fragrance, combining airy, fresh floral overtones with oriental spices and a deep woody note of neutral character.

MARJAH $50.0

A woody, amber, spice tinted odor modified with rose, jas ylang and other floral characters livened with a citrus, aldel somewhat green, herby top note riched and well fixed with sel animal fixatives.

FLORAL BOUQUET . . $20.00 lb.

A modern fresh, floral fragrance of delicate character and with unusual tonal qualities, harmoniously blended with amber, balsamic and musky notes, possessing exceptional tenacity. This is an intriguing Parisian motif in a modern vein and discreetly elegant in tone.

MODERN BOUQUET . $16.00 lb.

A chic, sophisticated fragrance with counterpoint of appealing beauty. Its fresh, penetrating tonality with slight flowery-fruity undertone produces a delicate yet powerful and tenacious fragrance.

WHITE TOUCH $30.0

This is a woody based fragrance both floral and oriental overt attractive top notes and su leathery undertone which combi make it a perfume of unusual be for modern extract work.

FLORAL BOUQUET . . $37.50

An intensely warm, flowery bou with pronounced lily, jasmine, y characters, enriched with ce green notes, carnation and rose

SPECIAL OFFER: Make a selection of *any THREE* of the above perfume specialties, and upon receipt of $1.00 to cover cost of packing and handling, we'll send you, prepaid, ½ oz. test samples of each.

FRAGRANCES
nd COSMETICS
and TECHNICAL USE
MICALS, BASIC
MATERIALS

lished 1871

ers, Inc.

NEW YORK 11, N. Y.

, Chicago, Illinois, Cincinnati, ornia, San Francisco, California, Clifton, N. J.

FRITZSCHE BROTHERS, Inc.,
76 Ninth Ave., New York 11, N.Y.

***Gentlemen:** For $1.00 (check or M.O.) enclosed, kindly send me ½ oz. trial bottles of the THREE perfumes checked herewith:*

NAME .....

TITLE .....

COMPANY .....

ADDRESS .....

CITY ..... **ZONE** .... **STATE** .....

- ☐ DELISSE BOUQUET (V-910)
- ☐ FRENCH AIRE (V-627)
- ☐ MARJAH (W-877)
- ☐ FLORAL BOUQUET (XX-000)
- ☐ MODERN BOUQUET (XX-010)
- ☐ WHITE TOUCH (V-584)
- ☐ FLORAL BOUQUET (W-399)

cents

UMERS

DAY

day, these
e fragrances
mother . . .

..... $50.00 lb.

, amber, spice tinted base
dified with rose, jasmine,
other floral characters, and
with a citrus, aldehydic,
green, herby top note, en-
d well fixed with selected
xatives.

OUCH .... $30.00 lb.

woody based fragrance with
al and oriental overtones,
top notes and subtle,
ndertone which combine to
perfume of unusual beauty
n extract work.

OUQUET .. $37.50 lb.

ely warm, flowery bouquet
ounced lily, jasmine, ylang
, enriched with certain
es, carnation and rose.

ndly send me ½ oz.
h:

.....

.....

.....

.....

STATE .....

UET (XX-000)
QUET (XX-010)
(V-584)

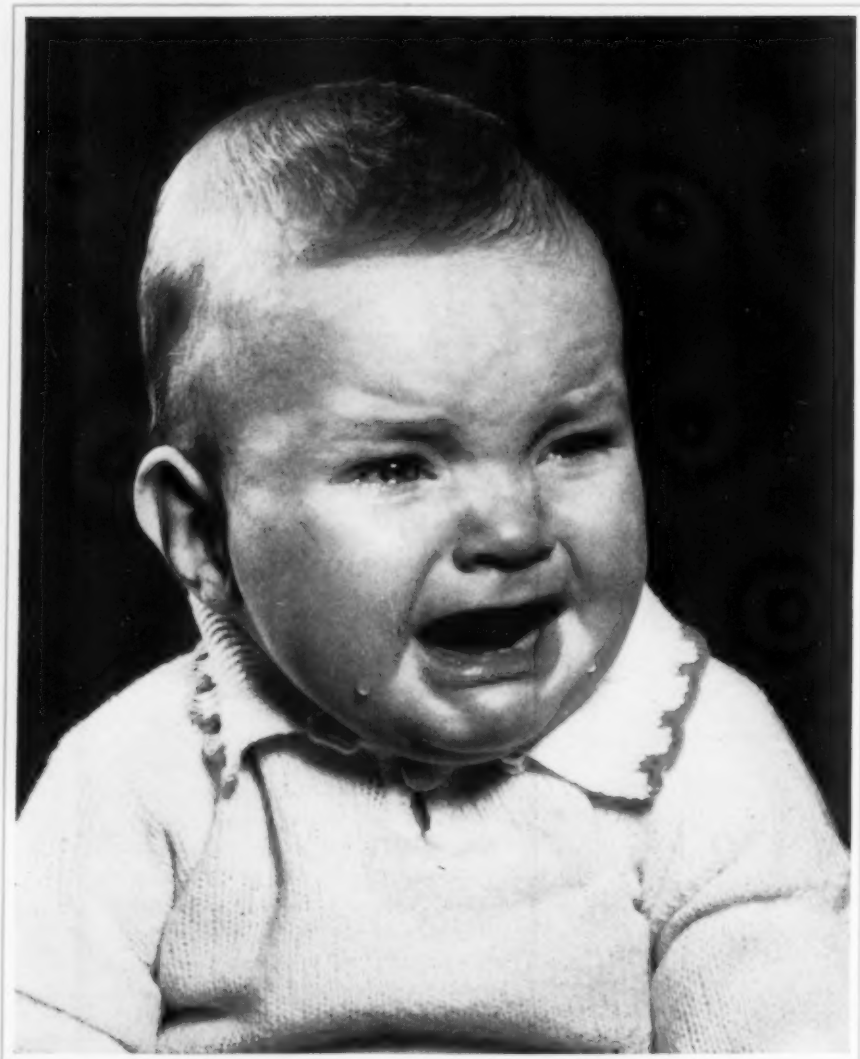
A CORNER OF THE WELL APPOINTED FRITZSCHE LIBRARY

THE Library Department of FRITZSCHE BROTHERS is an invaluable source of reference and research information for the firm's various divisions. It houses several thousand volumes dealing with cosmetics, food analysis and processing, and essential oils, as well as complete sets of the usual abstracting and indexing journals. A wide coverage of trade literature, and an up-to-the-minute catalog make it possible to answer all manner of questions quickly and thoroughly. The Library's staff, trained in the latest practices, provides a number of services not only for the FRITZSCHE personnel, but for FRITZSCHE'S customers: literature searches, preparation of bibliographies, answers to specific queries and problems. Our on-the-premises facilities plus close access to the world's finest information centers in and about New York City affords us a breadth of service of which we are justly proud. One of these days, we hope we may have the opportunity to prove its efficiency by helping to find the answers to some hard-to-fathom problems of yours.

FRITZSCHE *Established* 1871
Brothers, Inc.

PORT AUTHORITY BUILDING, 76 NINTH AVENUE, NEW YORK 11, N. Y.

BRANCH OFFICES *and* °STOCKS: *Atlanta, Georgia, Boston, Massachusetts, °Chicago, Illinois, Cincinnati, Ohio, Cleveland, Ohio, °Los Angeles, California, Philadelphia, Pennsylvania, San Francisco, California, St. Louis, Missouri, °Toronto, Canada and °Mexico, D. F.* FACTORY: *Clifton, N. J.*



OH-H-H-H! THAT OLD MEDICINE, AGAIN!

No, little boy . . . *not* that *old* medicine! Not the medicine that used to make you wince and cry every time you took it. Indeed, no! Now you're going to get a nice new kind of medicine. It won't make you cry . . . actually, it will make you lick your lips and really wish for more! . . . And that is one of the big differences between many of today's medicines and those of yesterday—PALATABILITY! This is the key to their greater acceptance and to the patient's cooperation in maintaining a prescribed dosage schedule for most beneficial results. . . . Proprietary, drug and pharmaceutical manufacturers will find our specialized experience in this field of flavoring extremely helpful in attaining the goal of greater palatability for their oral products. May we invite your consultation — without obligation and confidentially, of course.

For GOOD TASTE
in Pharmaceuticals *Consult* . . .

FRITZSCHE *Established* 1871
Brothers, Inc.

PORT AUTHORITY BUILDING, 76 NINTH AVENUE, NEW YORK 11, N. Y.

BRANCH OFFICES *and* *STOCKS: *Atlanta, Georgia, Boston, Massachusetts, *Chicago, Illinois, Cincinnati, Ohio, Cleveland, Ohio, *Los Angeles, California, Philadelphia, Pennsylvania, San Francisco, California, St. Louis, Missouri, *Toronto, Canada and *Mexico, D. F. FACTORY: *Clifton, N. J.*

ion of perfume in both of these types is generally 0.5 per cent and the fragrance is added to the shampoo mixture when the temperature has been lowered to approximately 45° C. Insofar as the clear type of shampoo is concerned, the concentration ranges from 0.3 per cent to 0.5 per cent and if difficulty is experienced in obtaining a clear product because of the perfume, solubilizers are used. The perfume, alone or with a solubilizer, is added to the concentrated soap or detergent before it is diluted with water.

An additional important factor is packaging. When the conventional glass containers or tubes are used there is rarely any additional problems for the manufacturer. However, with the introduction of two new packaging mediums for this product—aerosols and polyethylene containers—problems do arise. It is necessary to re-examine all the fragrance products to ascertain whether or not they can be used in these new packages.

Flavoring Dental Preparations

With toothpowders, the base is usually chalk. The chief characteristic of these bodies is that they have a great absorptive power and in fact are used in pharmacy on account of this property. According to L. Mansfield (*The Retail Chemist*, Oct. 1954), peppermint oil still reigns supreme as the favorite flavoring agent in England although in the United States of America there is a preference for oil of wintergreen (methyl salicylate). Peppermint possesses the essential characteristics of a flavor for dentifrice products in that it possesses a freshness which has a wide palatable appeal. Peppermint oil is not generally used as a straight flavor but usually has several other oils added to it to modify the flavor and at the same time to obtain a pleasing and special distinctive note.

Many substances have been used as adjuncts, including oil of cloves, anise, caraway, eucalyptus, pimento, cinnamon, nutmeg and thymol, to name a few. Citrus oils have also been used, but the public seem to prefer peppermint and the spice oils. Points which have to be borne in mind in the selection of the flavors for those powder products include the effect of the basic materials on the oils and other bodies used, and the amount of flavor absorbed in the powder. In some antiseptic powders phenol and salicylic acid are incorporated and care has to be taken that no substances are used as flavoring agents which are capable of reacting with phenol to give a dark-colored product with consequent spotting of the powder.

Again, some powders are of the antacid type, but unless the amount of alkali is excessive, no special precautions need to be taken except to omit the eugenol-containing oils such as cloves, pimento, etc., since the alkali reacts with the eugenol and the flavor effect is lost. Citrus oils are also best avoided except in small amounts. Another type of product is the oxygenated type, but here again unless citrus oils are used there is no need for worry as oxygen has not a great deal of effect on other oils.

The flavor is usually incorporated into a portion of the powdered ingredients, well mixed, and then mixed in with the remainder of the bulk. Owing to the absorptive nature of the basic ingredients it is very advisable to examine the powder for flavor value a few weeks after the flavor has been added, as selective absorption may have taken place and the flavor found to be quite different from what it was at the commencement.

The flavoring of tooth pastes follows the same rules as for powders, since they consist in the main of similar basic ingredients with an excipient added.

With liquid dentifrices once again standard type formula flavors can be used. Here the favorite agent must be soluble in the liquid employed. If this is alcohol then the problem solves itself, but with water it is necessary to add a little talc and to filter the liquid dentifrice bright or alternatively to use the terpeneless oils which are far more soluble than the natural ones.

Mouth washes are put out in the form of a solution or made up into effervescent tablets. Here too high a proportion of flavor must not be used as otherwise it has an irritant action on the mucous membrane. In mouth washes sometimes a lighter type of flavoring is used, cologne or orange flower water being employed in place of peppermint, caraway and anise oils. A type of flavoring that would be eminently suitable here would be one made on the lines of the so-called water soluble perfumes; this type has the advantage of immediately mixing with the water. With tablets made up for mouth washes, these are usually made effervescing and colored pink. A very popular type is flavored with a blend of menthol and thymol, with rose coriander and lemon oils added to give a refreshing bouquet.

Holland Mint Oils

R. Hegnauer writing in *Ber. schweiz. botan. Ges.* 63, 90-102 (1953) reports that various species of mint, grown in the Netherlands, were analyzed for the content of essential oil. The carvone content of the leaves of various mint species was determined. It was found only among the Spicatae (*Mentha longifolia, M. rotundifolia, M. spicata*). In the menthol-pulegone-producing species, namely *M. aquatica, M. arvensis, M. verticillata, M. piperita, M. pulegium*, no carvone could be found. Chemically, the piperitone-, pulegone-, and mentholmints belong together. The compounds represent various hydrogenation products of the same monocyclic terpene with an O next to the isopropyl group. The carvone-mints form a separate chemical group. In carvone and dihydrocarveol, O is next to the methyl group. Probably the menthol and carvone series are the principal representatives of the terpenes in the species *Mentha*. In a third group, the so-called linalool-mints compounds are found with no cyclization.

Flavoring Methionine and Choline Combinations

A formulation containing 400 mg. choline dihydrogen citrate, 100 mg. methionine, 10 mg. inositol, 2 mg. thiamine hydrochloride, 2 mg. riboflavin, 10 mg. niacinamide, 5 micrograms cyanocobalamine, 470 mg. liver extract to make 4 cc. in a vehicle containing three per cent polysorbate 80, 0.01 per cent sodium cyclamate, 10 per cent glycerin and 0.1 per cent methyl paraben, according to Herbert M. Gross (*J. Am. Pharm. Assoc. Sci. Ed.*, Sept. 1954) has an offensive, putrid odor and a nauseating, bitter, fishy taste. A taste panel concluded that of the various mixtures tested, imitation butter caramel flavor was indicated as having the most suitable characteristics to mask the disagreeable taste and odor of methionine, choline and liver mixtures. The intensity of this flavor matches the intensity of the taste of the disagreeable constituents and thus effectively masks them. The flavors were treated at a concentration of one per cent. Coffee extractives, vanillin and other synthetic aldehydes, diacetyl and other ketones, ethyl butyrate, glycerin, ethyl alcohol, water and caramel color comprise the mixture named "imitation butter caramel flavor." Imitation coconut custard flavor had good characteristics for immediate taste and odor coverage, but did not mask the disagreeable aftertaste.

Why you should use ROCHE DRY vitamin A acetate

1 *HIGH STABILITY* –Tests of Roche Vitamin A acetate powder alone and in combination with Roche vitamin D_2 powder and other dry vitamins, minerals, fillers, lubricants and flavors, under manufacturing conditions show that Roche dry vitamin A has excellent stability in tablets, in gelatin capsules, and in powdered products. Other tests of Roche vitamin A and vitamin D_2 powders stored in open containers under accelerated aging prove that these products have an extraordinarily high potency retention.

2 *LIGHT COLOR . . . FREE FLOWING.* Roche dry vitamin A is a light yellow color. It is produced as spherical granules having an irregular surface. It flows freely. The granules contain finely dispersed vitamin A acetate of high purity in a starch-coated protective matrix. It is practically odorless and tasteless.

Prove it yourself, get the ROCHE demonstration kit

Prove to yourself the excellent color and uniform particle size of Roche dry vitamin A acetate with this simple demonstration. Kit also contains abridged version of the new Roche dry vitamin A technical brochure to give you quick facts about the product. We shall be glad to send you one of these free kits at your request. Or ask your Roche salesman. There's no obligation, of course.

3 *VARIOUS POTENCIES and COMBINATIONS.* Roche dry vitamin A acetate alone, or in combination with Roche dry vitamin D_2, will give you easier manufacturing of dry preparations: tablets, capsules, vitamin-fortified powdered supplements. See the table below for the many potencies and mesh sizes which Roche has to help you.

ROCHE DRY Vitamin A acetate			ROCHE DRY vitamin A acetate and vitamin D_2 COMBINATIONS			ROCHE DRY Vitamin D_2		
Type	Potency (in U.S.P. units per gram)	Mesh Sizes	Type	Potency (in U.S.P. units per gram)	Mesh Sizes	Type	Potency (in U.S.P. units per gram)	Mesh Sizes
Type 325	325,000	40, 60 and 80	Type 325A-32.5D	A –325,000 D_2– 32,500	40 and 60	Type 850	850,000	40 and 60
Type 500	500,000	40, 60 and 80						
Type 250*	250,000	40, 60 and 80	Type 500A-50D	A –500,000 D_2– 50,000	40 and 60			

*Small inventories usually available

4 *UNIFORM PRODUCT.* The many years of experience which Roche has in vitamin research and manufacturing insure the production of dry vitamin A which is uniform in potency, color and particle size. Special handling is unnecessary.

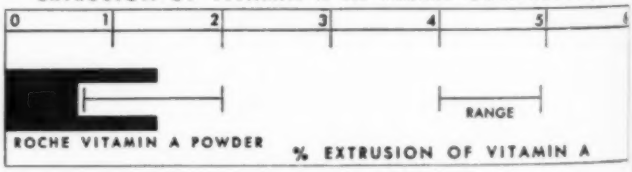
5 *CONVENIENCE.* With its free-flowing character, easy combination with other dry ingredients, and starch-coated, irregular particle surface to prevent separation during mixing and sticking in tabletting machine dies, Roche dry vitamin A is ideally suited for preparing tablets, capsules and dry formulations.

6 *NO FISHY TASTE* . . . no fishy "burp" or after-taste will *ever* occur in any of your products made with Roche dry vitamin A.

7 *PACKAGING.* All types of Roche dry vitamin A acetate and Roche dry vitamins A and D_2 combinations are packed in polyethylene bags in fibre drums or 2-kilo Tamperpruf metal containers–to insure safe delivery, easy handling and storage.

8 *LOW PROCESSING LOSS.* Roche dry vitamin A has excellent resistance to the high pressures found during tabletting. Thus you may make tablets virtually without loss of vitamin A potency during processing. The table (below) shows the extremely small percent of vitamin A loss due to extrusion.

EXTRUSION OF VITAMIN A IN TABLET COMPRESSION



9 *BIOLOGICAL AVAILABILITY.* Laboratory tests by rat liver storage assay and by U.S.P. rat curative growth assay show that Roche dry vitamin A acetate and dry vitamin D_2 have complete biological availability in the test animals.

10 *SAMPLES* are yours on request. Just ask your Roche salesman or write the Vitamin Division.

Need help from Roche technical service?

When you're faced with technical problems concerning the use of vitamins in your pharmaceutical products never fail to call Roche. From experience gained in creating and developing the original syntheses of many vitamins and in producing top-quality vitamins by the tons, Roche has a wealth of practical knowledge and expert technicians at hand to help you. In short, Roche has vitamin know-how. Make it a practice to look to the leader in vitamins–Roche.

Call **ROCHE** for Vitamins

VITAMIN DIVISION · HOFFMANN-LA ROCHE INC.
NUTLEY 10, NEW JERSEY **NUtley 2-5000**

Pacific Coast distributor: L. H. BUTCHER COMPANY
San Francisco • Los Angeles • Seattle • Portland • Salt Lake City
In Canada: Hoffmann-La Roche Ltd., 286 St. Paul Street, West, Montreal, Quebec

Abreast of the Markets

Review of Essential Oils

The overall price structure of essential oils during 1954 was quite firm from the general viewpoint, L. Gampert, president of the Essential Oil Association of U.S.A., told the annual meeting of that association last month. Mr. Gampert continued:

"There are exceptions here and there, but the general trend hasbeen upward, and the year ended on a strong note. . . With respect to oils of Chinese origin, anise and cassia, particularly oil of cassia, have advanced to fantastic levels, and the anise flavoring problem has been further aggravated by the somewhat mysterious shortage and high price of anethol.

"Oil of citronella, both Java and Ceylon types, have practically doubled in price during the year, and are still quite firm. The same thing has happened with lemongrass oil, although the ultimate future of that product may be somewhat precarious due to the impending commercial production of synthetic citral.

"All of the lavender oils, and lavandin have advanced substantially in price, particularly those of high ester specifications. The action of oils of Spanish origin has been dull and unimpressive.

"Camphor white oil and camphor sassafrassy are high in price and quite scarce.

"Brazilian rosewood oil is firm and has increased moderately in price during the year.

"Ocetea cymbarum is both scarce and very high, resulting in substantial price advances in both safrol and heliotropine.

"On the other hand, Siberian pine needle oil, oil of bergamot, and oil of cloves, have eased somewhat during the year, although Abies Siberica is again firming up.

"With respect to oils of North American origin, peppermint has been the most interesting performer, registering a very sharp advance in a comparatively short period of time. Its sister oil, spearmint, was rather weak during the year, but is now showing signs of firming up.

"Cedarwood oil has been exceptionally firm, and continued to be so.

"The advance in the price of vanilla beans has been tremendous, and will, in all probability, remain extremely firm for the year 1955."

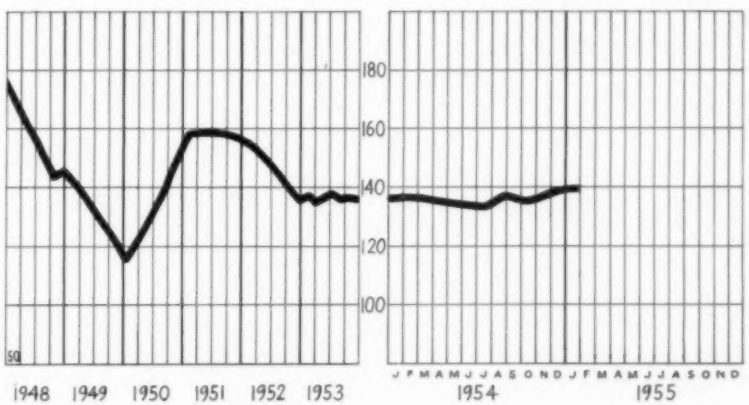
Status of Citrus Oils

Lemon oil demand is said to exceed supply at the present time, and this means supplies available from the two main sources, California and Italy. The estimate of California supplies is placed at 700,000 pounds, against Italian (Italy and Sicily) supplies of from 775,000 to 800,000 pounds.

One reason given for the heavy demand for lemon oil is the spectacular growth in consumption of soft drinks like Coca-Cola, Pepsi-Cola and other cola beverages, Nehi, etc. The growth of this business is said to be mainly caused by the increased population in this country, the fact that the people of this country are constantly increasing the amount of time they have for recreation, and the fact that automatic vending of these drinks have made them more easily available to all sorts of people. Also still further growth is anticipated as the result of drinks of this type now being sold in cans rather than in bottles.

In the face of our steadily increasing demand for lemon oil, it is reported that Russia is increasing its purchases of lemon oil from Sicily. Fruit cannot be shipped into the hinterlands, and as the result of the new policy of consumer goods—lemon in tea and lemon drinks—bottled oil is shipped instead of fruit.

In contrast to the tight situation surrounding lemon oil, orange oil is in large oversupply resulting in the price of domestic oil falling $2 or $3 dollars a pound to level of $1.00 or less, compared with a price of over $3.00 for imported orange oil. The reason for this weakness in orange oil can be laid right at the door of the frozen orange juice development in this country, as well as the widespread use of orange pulp for cattle feed. The large demand for these products leaves the orange oil (obtained from the rind) as a by-product. Naturally, domestic producers of orange oil in California and Florida have been trying to balance production and consumption by lowering prices, but thus far supplies have continued to overbalance consumption by a large amount.



The price index of fifty commodities for January advanced from 132.3 to 132.5.

CHANGING DISTRIBUTION PATTERNS IN COSMETICS

(*Continued from page 186*)

profitable way of doing business. So is the franchise method. The department store is in a position to make its influence felt, and to keep more franchise lines, on which its true interest depends, but it must make up its mind whether it wants to run a department store cosmetic department or a super-market cosmetic department.

ABRUPT PACKAGE MODERNIZATION

(*Continued from page 189*)

Two labels are used instead of one, each to do a more efficient specialized job. The front label gives the product identification and use and the back label gives the full required statement of ingredients and directions.

The new carton, which is shown on the left in the illustration here, more tersely identifies the product and the use for point of sale and impulse buying. This carton features three different horizontal and vertical panels, each of which meets the specific display requirements. One of these panels features a photo reproduction of the bottle instead of the line drawing formerly used and this is suited for drugstore shelf display. A horizontal panel which features Bromo's new distinctive logotype is especially suited for self-service display. The third panel is a simplified vertical face for highly vertical drug displays. The fourth side of the carton is reserved for the necessary legal copy. Bromo-Seltzer's familiar blue color has been maintained for the package as well as for the bottle.

METERED AEROSOL DISPENSING

(*Continued from page 193*)

affiliate of Hampton Products in Portland, Pennsylvania. This development, which is extremely unique and for which there are now patents pending, is described below. Although this description applies to the commercial meterspray valve as it is currently being produced under arrangements with the Dill Valve Manufacturing Company, it demonstrates the unique principle and characteristics which make this type of mechanism so important to the cosmetic and pharmaceutical field.

The commercial experience with this mechanism on repeated testing shows an extremely accurate dispensing of product. It is obvious from seeing the above design that variations can be made rather simply by changing the size of the cavity, depending on the production or the use intended. Some of the applications are rather obvious, but I would like to briefly mention some. In the cosmetic and toilet goods field where, as mentioned above, we have the application of dispensing perfumes, this particular mechanism is now being modified for inclusion on glass bottle dispensing of colognes. Its ultimate use in dispensing a metered amount of tooth paste onto a tooth brush will, in my opinion, make such products more practical and acceptable, particularly where control of the dispensing is important in the hands of children In the pharmaceutical and the proprietary drug field where it is extremely important to deliver proper dosages, either for toxicological reasons or for therapeutical reasons, this mechanism now makes many products, hitherto impractical, commercially feasible. Aside from the metering characteristics of this type of mechanism, it does assist in better atomization at lower pressures. As already indicated above, this type of mechanism lends itself to foam type as well as aerosol mist type products. The filling of Meterspray products presents special problems since it is not practical to fill through the valve and in many instances it is impractical to use the refrigerated method of filling. For those reasons especially designed filling equipment has had to be fabricated.

In closing, I wish to sum up by stating that although the first metered aerosol dispensing valve of this principle has been applied to the perfume industry, it has ushered in a new approach long overdue, applying specifically, in many instances, to the cosmetic and pharmaceutical field. Within the next six to twelve months, you will witness more practical applications in many other fields.

EVALUATION OF DERMAL PHENOMENA

(*Continued from page 177*)

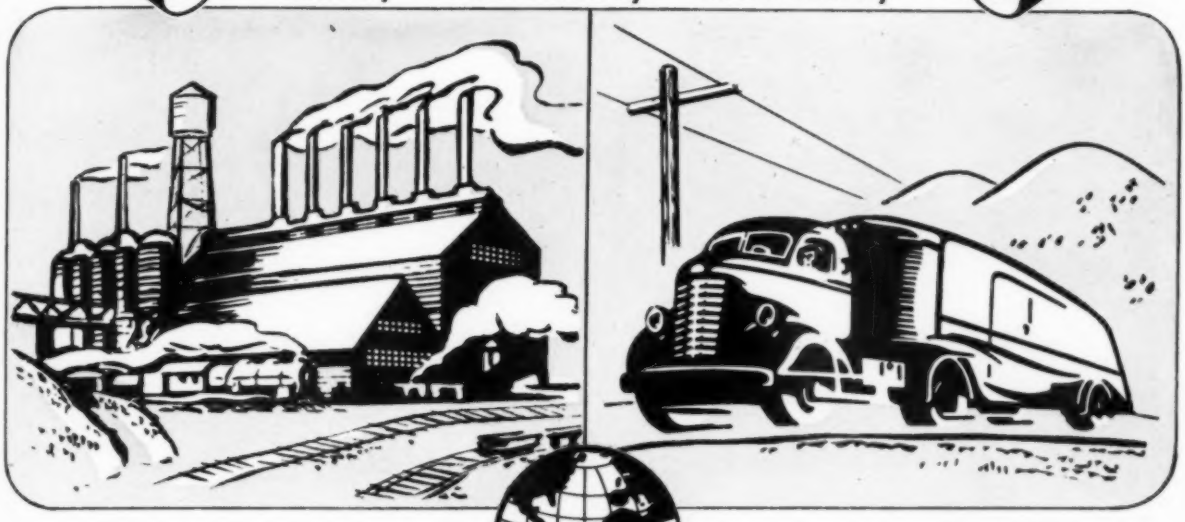
mans, designed to predict future developments. To say that the method has been useful and constructive in the cosmetic field is a gross understatement. It has been outstandingly so, and continues to be a basic technique. In this procedure the new cosmetic product is compared to an old product of similar type, which has been in use for a number of years and which has caused no unusual number of complaints. Closed patches with the new and the old formula are applied to the intact normal skin for 48 hours. Readings of the responses are made at 24-hour intervals for three times following removal. Ten to 14 days later the patches are reapplied to approximately the same skin areas for 48 hours and responses scored at intervals following removal. The number of subjects showing sensitization reactions from the new formula should not exceed the number showing reactions to the old formula. Schwartz and Peck also recommended a comparative use test to evaluate products which had satisfactorily passed the patch test. As with any worthwhile procedure, there have been many discussions of weakness and defects, and equally numerous suggestions for modifications. The basic principle remains sound: cutaneous sensitization induced through one or more dermal exposures followed by a time interval to permit antibody development and then a challenge ex-

(*Continued on page 250*)

WHETHER YOU JOB OR MANUFACTURE

COUNT ON WH&C

To Supply Your Needs
Quickly • Conveniently • Economically



SINCE 1838

Raw Materials for MANUFACTURERS

Raw Materials for JOBBERS

SESAME OIL, U.S.P. • PEANUT OIL, U.S.P. • FATTY ACIDS, all grades
Soap Colors • Vegetable Oils • Mineral Oils • Animal Oils
Starch • Heavy Chemicals • Synthetic Organic Detergents

Lecithin	Sodium Bicarbonate
Lanolin	Sodium Silicate, all grades
Chlorophyll	Metasilicate, Anhydrous and Pentahydrate
Caustic Soda	Sodium Orthosilicate
Caustic Potash	Stearic Acids, all grades

Foaming Agents Sequestering Agents Phosphates

Dry compounds mixed to your own private formula. Technical assistance available, upon request.

Faithfully Serving the Industry Since 1838

Welch, Holme & Clark Co., Inc.

439 West Street, New York 14, N. Y. • CHelsea 3-6048

(Continued from page 248)

posure for definitive evaluation of sensitizing potential. Principal problems with the new method have been details concerning the amount of sensitizing exposure mechanics of patching, adhesive tape dermatitis, duration of antibody interval, and interpretation of reactions following the challenge exposure. Without experience and the use of control materials the method can be very misleading. Various investigators have criticized the adequacy of the sensitizing phase; much has been said and written about the number of subjects and about the statistical significance, but withal the method has proved itself very useful.

Presumably to overcome some of the problems inherent in the Schwartz-Peck test, there has been proposed a hybridization of the Landsteiner-Jacobs and Schwartz-Peck tests. It substitutes the patch of Schwartz for the injection of Landsteiner, the timing of Landsteiner for that of Schwartz, and, incidentally, humans for guinea pigs. With this method, a patch is applied to the skin for 24 hours and then removed and the response graded. After an interval of 24 hours the procedure is repeated. By this means 10 or 15 repeated insults are made. After a period of two or three weeks following the last insult patch the challenge patch is applied and left on for 48 hours, removed and response scored. Like most complex hybrids, the outcome is often unpredictable. It compounds the inherent problems of the patch mechanics, primary irritation, and skin fatigue. Whether it has enhanced the sensitization phenomenon, and particularly the realistic evaluation of product hazard, remains to be seen. Our experience leads us to prefer a wait-and-see attitude. As Traub et.al.[8] have pointed out, the dangers of submitting human subjects to such an insult deserve most careful consideration. This method, variously referred to as the Shelanski,[9] Shelanski-Draize, or "repeated-insult" test, may eventually be modified to a practical basis and have definite advantages. At present, however, such advantages have not been established, and only time, experience, and careful study will determine whether it will overcome the obvious disadvantages.

Use Patch Method

All the methods discussed thus far have one major disadvantage in common—they lack correlation with use conditions. This correlation is especially important to the cosmetic industry, whose major objective is skin beauty. Other industries can and do caution against skin contact as the obvious way to avoid irritation and sensitization. Industrial hygiene techniques of ventilation, dust control, closed systems, protective clothing, and sanitation make possible the handling of any chemical. In contrast, skin exposure to chemicals is the ultimate objective of the toilet goods industry. Any proposed method of evaluation should start with this basic fact in mind. Not all cosmetics, however, expose the skin equally. Some cover small areas, some large areas. Some are used only occasionally, others frequently; some for short periods, some long; various body areas are involved. Some cosmetics are liquid, some solid, but all are applied to skin, mucous membrane, or keratin appendages as fingernails or hair.

In view of this heterogeneity of use it seems obvious that the whole procedure of confined patches, either open or closed, should be subject to careful consideration from the viewpoint of ultimate objectives and hence, realistic evaluation. A proposed regime based on such considerations has recently been presented by Traub, et. al.[8] This is essentially a combination of product use test and the Schwartz-Peck prophetic patch test, a logical combination which goes far in overcoming some of the various problems outlined previously. Basically the test involves a preliminary patch to detect primary irritation of the test material and to determine if any of the subjects may have been previously sensitized to any of the ingredients. A patch is applied for 48 hours; removed; and the response scored. This is followed by a period of supervised use, under actual use conditions, for 3 weeks or more and then by a challenge patch two weeks after cessation of use. Many variations of this procedure are, of course, obvious. Essentially, however, it overcomes the problem of repeated patch applications, trauma, volatile irritants and other unrelated conditions. It gets down to fundamentals on this important problem and has the additional advantage of providing a supervised use test prior to a market test.

One of the major disadvantages of the method is that for some cosmetics the use of a control material is desirable for comparison. This necessitates use of control groups and the attendant statistical problem is more complicated. When all is said and done the use-patch method appears destined for modification into an extremely useful tool. Neither it nor any of the other methods, however, can be adequate by themselves.

In summarizing, I think the most important point to emphasize is that the evaluation of sensitization potential is not a cook book or routine testing procedure. It suffers from the fact that in principle it appears so simple, while in practice it demands the skill and interpretive thinking of an experienced biological scientist. Since cutaneous sensitization is a biological phenomenon and not a disease, it should not be confused with clinical dermatology. Its evaluation is an experimental procedure whether animals or humans serve as subjects.

A swing back to the practical may be presaged by interest in the use-patch technique, which, when combined with good experimental and statistical design, provides a common sense answer under common sense conditions. This procedure, where applicable, accompanied by adequate clinical observation and followed by careful and alert test marketing, offers a combination which provides the essential elements of an adequate program including: preliminary animal studies, pharmacological and clinical evaluation, primary irritation,

(Continued on page 252)

Quality Makes the Difference

Proper crystal structure is important whether in quality glass or in quality STEARIC ACID. In glass it imparts clarity. In GROCO STEARIC ACIDS crystal structure is the result of the proper Palmitic to Stearic Acid ratio and makes the STEARIC ACID "workable". Whether in creams, buffing compounds, candles or other products, try STEARIC ACID with a 55%-45% Palmitic-Stearic ratio.

GROCO STEARIC ACIDS yield cosmetic creams with the texture and pearliness so much in demand. In candles, wax combinations, emulsifiers, soaps, you need STEARIC ACIDS with the highest degree of thermal stability and resistance to rancidity and discoloration.

For full information, send for our new catalog "Fatty Acids In Modern Industry".

DISTILLED STEARIC ACID

	GROCO 55L Triple Pressed	GROCO 54 Double Pressed
Titre	54.5° — 55.2°C.	53.8° — 54.4°C.
Titre	130.1° — 131.4°F.	128.8° — 129.7°F.
Color 5¼" Lovibond Red	0.5 max.	0.7 max.
Color 5¼" Lovibond Yellow	1.5 max.	2.5 max.
Saponification Value	207 — 209	208 — 212
Acid Value	206 — 208	207 — 211
Iodine Value (WIJS)	1 max.	5.0 — 6.5

A GROSS & COMPANY

MANUFACTURERS SINCE 1837

295 MADISON AVENUE, NEW YORK 17, N. Y. • FACTORY: NEWARK, N. J. • DISTRIBUTORS IN PRINCIPAL CITIES

(Continued from page 250)

dermal sensitization, prolonged use exposure, and statistically significant numbers.

The allergenic, the idiosyncratic, the crank, the hypochondriac, and the honestly mistaken or misinformed remain. No evaluation technique can predict these—they are the unpredictable, the calculated risk.

REFERENCES

1. Hazleton, L. W., Jr.: J. of the Soc. of Cosmet. Chemist., I, 3, December 1948.
2. Gibbs, O. S.: Pro. Sc. Sect. TGA, 2:20, May 1944.
3. Draize, J. H., Woodward, G., and Calvery, H. O.: J. Pharm. & Exper. Therap. 82:377, 1944.
4. Landsteiner, K., and Jacobs, I.: J. Exp. Med. 61:643, 1935.
5. Landsteiner, K., and Chase, M. W.: J. Exp. Med. 69:767, 1939.
6. Jadassohn, J., Verhand, I. V.: Deutsch, Dermat. Gesllsch. graz., 1895.
7. Schwartz, L., and Peck, S. M.: U. S. Public Health Reports 59:546-557, 1944.
8. Traub, E. F., Tusing, T. W., and Spoor, H. J.: AMA Arch. of Derm. & Syphil. 69:399, 1954.
9. Shelanski, H. A., and Shelanski, M. V.: Proc. Sc. Sect., TGA 19:46, May 1953.

ACETYLATED MONOGLYCERIDES IN COSMETICS

(Continued from page 171)

Several tests were performed to determine the toxicity of these products.[1] Human patch tests showed no reaction and no sensitization in any subject. Multigeneration animal feeding has shown essential equivalence to the parent natural fat. On the basis of these tests and other information, the distilled acetylated monoglycerides may be considered safe for use in ordinary cosmetics. These tests and other data have been reviewed by the Food and Drug Administration.

Another indication of their low toxicity is that a number of laboratories are investigating various acetylated glycerides for possible use in the food industry. Feuge and co-workers mention that some of these products have potential application as margarine-like products[2] and as coating materials for frankfurters, cheese, and similar foods.[3,4] Baur has reported their possible use as fat shortenings.[5]

Cosmetic Uses

The unique properties of the distilled acetylated monoglycerides have prompted a survey of their potential use in lipsticks and lip ice pomades, baby oils, hair dressings, alcoholic lotions, powder foundations, hand creams and lotions, and shampoos.

Lipsticks and Lip Ice Pomades

Castor oil is one of the most extensively used fatty acid glycerides in lipsticks. Excellent lipsticks may be obtained by substituting AML for castor oil except that the staining dyes, such as tetrabromofluorescein, are insoluble. However, some lipsticks contain other dye solubilizers in which the dye is too soluble. This often causes undesirable "creeping" of the stain about the lip edges. If the dye solubilizer and AML are miscible, the use of AML might result in an optimum solubility of the dye. This would inhibit "creeping" and also produce a fast and lasting stain.

Although extensive tests have not been conducted, the preliminary results indicate that the incorporation of acetylated monoglycerides into lipsticks should contribute resistance to fracture. Since they are nongreasy, they can be combined with a greasy base to produce any desired intermediate characteristic.

Baby Oils

Many baby oil products consist of mineral oil to which lanolin has been added as an emollient, but a tendency toward cloudiness limits the amount of lanolin that can be used. Clear solutions of lanolin in AML can be obtained by filtration. For example, a mixture of 30 per cent AML, 10 per cent lanolin, and 60 per cent mineral oil was slightly turbid, but filtration yielded a bright clear solution. In contrast, 10 per cent lanolin and 90 per cent mineral oil gave a turbid solution which after filtration still remained slightly turbid. These few preliminary experiments indicate that the addition of acetylated monoglycerides may make it possible to incorporate larger amounts of lanolin into baby oil preparations. They should also make the film left on the skin less greasy.

Hair Dressings

Preliminary experiments indicate that the use of acetylated monoglycerides should result in nongreasy hair tonics that will not stain hat bands, upholstery, etc. Some hair tonics consist of castor oil or polyalkylene glycols dissolved in alcohol. A clear hair tonic containing polyalkylene glycols and five per cent AML was made. Preliminary investigation of this hair tonic gave favorable results with respect to application and use.

Alcoholic Lotions

The solubility of the acetylated monoglycerides in alcohol makes them useful in preparations containing a high percentage of alcohol. For example, 10 per cent AML can be dissolved in alcohol-water mixtures containing as much as 20 per cent water. Since it is also a solvent for hexachlorophene, an alcoholic solution of the two might be used in spray deodorants. This should produce a nongreasy film having odor-absorbing and odor-formation-preventing properties.

Acetylated monoglycerides might also be incorporated into lotions designed to be applied before using an electric shaver. These lotions generally contain lubricants such as isopropyl myristate or isopropyl palmitate. AML should provide the same lubricating properties and at the same time leave a nongreasy residue.

Acetylated monoglycerides in sun tan lotions offer interesting possibilities, whether the lotions are alcoholic solutions or oil emulsions of various sun screen agents. The acetylated monoglycerides should help deposit a continuous screening film with a nongreasy feel, a property much desired in these products.

(Continued on page 254)

Phantolid

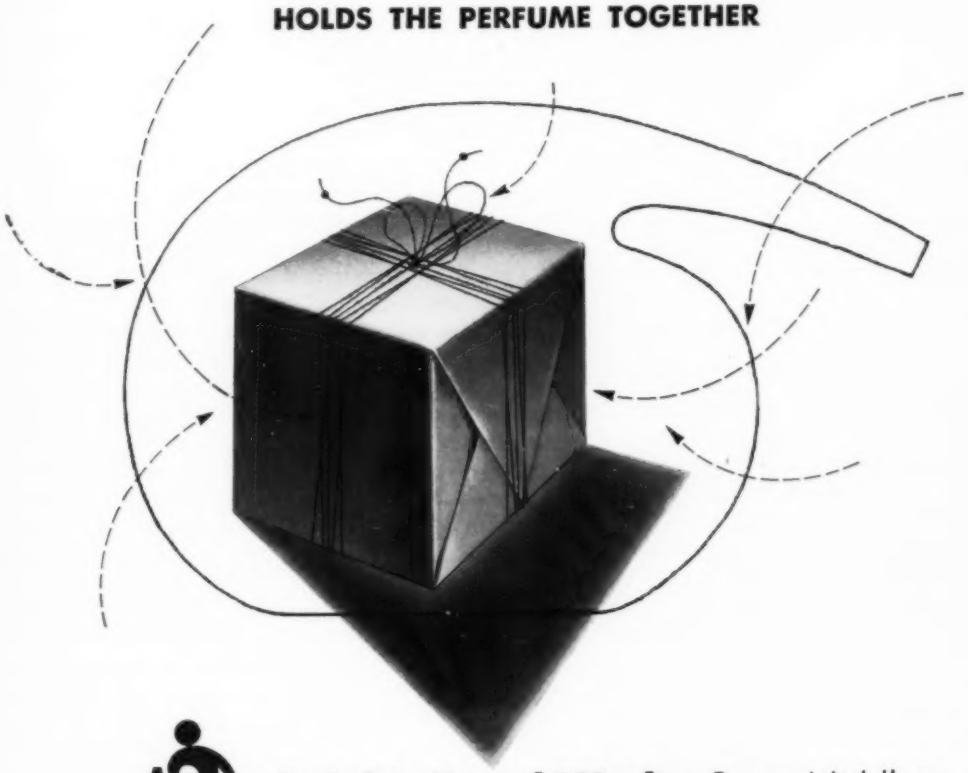
THE
new
aromatic chemical
musk-tonkin type
lasting, economical

Useful addition to present standard fixatives

Does not discolor perfumes, creams, soaps, and other cosmetic preparations

Like a string around a package, it...

HOLDS THE PERFUME TOGETHER



® *

Polak's Frutal Works, Inc., Middletown, New York

*Domestic and Foreign Patents applied for.

(Continued from page 252)

Powder Foundations

A popular type of powder foundation may be formulated from a base containing carnauba wax (four parts), lanolin (five parts), and isopropyl palmitate (58 parts). This product has a hard, easily fractured surface when pigments are incorporated into the base. A more homogeneous and firmer paste was obtained when AML was substituted for the isopropyl palmitate. Application on the skin left a nonshiny, nongreasy film.

Cream Bases

AMHL was used as a substitute for glyceryl monostearate in the formulation of oil-in-water creams with high water contents. These creams contained spermaceti wax, glycerine, and sodium lauryl sulfate and had excellent appearances and good consistencies.

These cream bases are possible vehicles for carrying water-soluble active components, for example, the aluminum salts used in antiperspirants.

Hand Creams and Lotions

Many hand creams and lotions depend on a polyol such as glycerol for softening the hands. Typical bases made from soap, cetyl alcohol, or glyceryl monostearate often leave a sticky residue. This has not been investigated thoroughly, but the properties of the acetylated monoglycerides suggest that their inclusion would result in products which would yield a nongreasy residue on the skin.

Shampoos

Monoglycerides frequently are used in detergent shampoos to improve hair condition or to change the physical appearance of the product. When AMHL was substituted for glyceryl monostearate in a liquid cream shampoo formula, a cream paste shampoo was obtained. A heavy liquid cream shampoo was produced when AML was used.

Summary

Natural fats and oils are classical raw materials in cosmetic formulations. In recent times, glycerides derived from these fats and oils have become available commercially and have been used by the cosmetic industry. The earlier ones were mixtures of mono-, di-, and triglycerides. Even more recently, pure distilled monoglycerides have been available and have been used widely. The production of distilled acetylated monoglycerides is a continuation of the trend toward specialized modifications of natural fats and oils.

A preliminary investigation of two different types, acetylated monoglyceride from lard (AML) and partially acetylated monoglyceride from hydrogenated lard (AMHL), indicated that the trend may continue since their desirable properties can be used advantageously in the formulation of cosmetics.

ACKNOWLEDGMENT

The authors gratefully acknowledge extensive information and samples supplied by Dr. Norris Embree and Dr. George Y. Brokaw of Distillation Products Industries, Division of Eastman Kodak Company, Rochester, N. Y., and editing of the manuscript by Dr. Joseph P. Ferri of Evans Research and Development Corporation.

REFERENCES

1. Brokaw, G. Y., private communication.
2. Feuge, R. O., Gros, A. T., and Vicknair, E. J.: J. Am. Oil Chem. Soc. 30:320 (1953).
3. Feuge, R. O., Vicknair, E. J., and Lovegreen, N. V.: J. Am. Oil Chem. Soc. 30:283 (1953).
4. Paper presented at the 14th Annual Meeting of the Institute of Food Technologists, June 27-July 1, 1954.
5. Baur, F. J.: J. Am. Oil Chem. Soc. 31:147 (1954).

LATHER SHAVING CREAMS

(Continued from page 173)

creams, as it stabilizes the emulsion, and also produces a velvety feel on the skin. Several popular brands contain this material.

Several shaving creams, currently on the market, contain certain special ingredients designed to preserve a constant consistency. These additives are characterized by some of the mucilages of gums. Alginates seem to have proven most satisfactory in this capacity. Synthetic gums, such as methylcellulose can also be used to increase and stabilize the consistency.

In connection with the special ingredients used in shaving creams, hexachlorophene and similar germicides, have been added to more than one popular brand. These antibacterial agents reduce the possibilities of chance infection of the injured hair follicles, razor cuts, and abrasions. According to Lesser,[2] shaving creams were the first major nationally advertised products to contain hexachlorophene. The quantities of hexachlorophene used in shaving cream has been arbitrarily set at 0.2 per cent. This is sufficient to give adequate protection against any normal shaving mishap.

Various other materials, such as myristic acid, oleic acid, stearin, diglycol stearate, borax, boric acid, petrolatum, and castor oil are used in the formulation of lather shaving creams. These materials are used mostly to produce certain effects impossible to obtain through the use of other, more common agents. The majority of these compounds are used, then, only when special properties are desired in the finished product.

The actual manufacture of shaving cream is a difficult operation. It is necessary to exercise unusual care, during the manufacturing processes needed to make this product. There are several methods used in the preparation of these creams, but they can all be divided into one of two categories—boiled, or cold process. In general, the boiled process produces a smoother softer, more uniform cream than does the cold process. However, it is the more difficult of the two. The basic differences in these two processes can best be explained by the comparison of the two formulas, using a different process for each cream. For this reason, no further

(Continued on page 256)

LAUTIER FILS

"A Standard of Quality Since 1795"

GRASSE, FRANCE

Around the World

Uniform Quality Merchandise Shipped From any of Our Many Branches and Factories

Essential Oils

Natural Flower Absolutes **Concentrated Natural Fixatives**

Synthetic Aromatics

LAUTIER FILS. INC.

321 Fifth Avenue, New York 16, N. Y. • 874 North Wabash Avenue, Chicago, Ill.

GRASSE PARIS LONDON BEYROUTH ST. LOUIS SANTIAGO

(Continued from page 254)

elaboration will be given with regards to preparation at this time.

Equipment, that is proper equipment, is a very important phase of shaving cream manufacture as is a fully equipped analytical control laboratory. Generally, a steam jacketed kettle is best for the manufacture of lather creams. Stainless steel is recommended, but glass lined can be used. Thomssen[2] recommends the use of a steam jacketed kettle, equipped with both steam coils for heating, and water coils for cooling. He also recommends the use of a slow speed (5RPM) mixer, that barely fits the inside of the kettle, to prevent the caking of cream on the walls of the kettle. During the manufacture of shaving cream, it becomes very heavy, so that a heavy duty, strong, slow mixer is required to pull it. Shaving cream is mixed for such a prolonged period that high speed mixers would tend to incorporate too much air. At any rate, during the manufacture of shaving cream, the paddle of the mixer should be well below the surface of the cream. Thix excludes the period during which the cream is very stiff. The balance of the equipment used for this product is essentially the same as that used for the brushless creams.

Earlier, the softening of the beard, by water, was mentioned. It is of great importance in shaving, to properly wet the beard before attempting to shave. For this reason, most manufacturers place within their directions, the suggestion that the face be thoroughly washed with soap and water before applying the shaving preparation. Washing cleans the face and removes the oil and sebum from the beard thus allowing the water in the cream, to wet it.

The following formulations are illustrative of some of the newer formulations, now being marketed. It will be seen that several methods of manufacture are given. However, in most cases, more than one procedure can be followed for each individual formula.

No. 1
LATHER SHAVING CREAM

Coconut Oil	25.5 pounds
Stearic Acid	162.0 pounds
KOH 45° Be	68.0 pounds
Glycerine	79.0 pounds
NaOH 50 Per Cent	13.5 pounds
Lanolin	2.5 pounds
Neutral Soap	1.0 pound
Water	118.0 pounds
Perfume	30.0 ounces

Heat the coconut oil, stearic acid, and lanolin together in a suitable container, to a temperature of 180° F. Heat the water to the same temperature and add the soap, with stirring, until it is dissolved. When complete solution is effected, add the glycerin, KOH, and NaOH. Pour this solution into the hot oils, and place under slow mechanical agitation. Continue heating until the product starts to boil. Discontinue heating at this point, but keep stirring the cream until it has cooled to room temperature. Add the perfume, and age for two weeks, to insure stability and produce a pearl.

No. 2
LATHER SHAVING CREAM

Stearic Acid	35.86 per cent
Coconut Oil	8.31 per cent
Olive Oil	1.21 per cent
Sodium Hydroxide	1.01 per cent
Potassium Hydroxide	7.86 per cent
Propylene Glycol	3.25 per cent
Glycerine	1.99 per cent
Water	40.08 per cent
Perfume	0.43 per cent

Mix the coconut oil, olive oil, and glycerin, and heat to 80° C. Dissolve the alkalies in half of the water and add it, in a thin stream, with slow stirring (4 to 8 RPM), to the hot oils. Allow the stirring to continue until the oils have been saponified. This can usually be discerned by noting the clarity of the solution. Saponification of these oils usually takes place at this temperature, within about 20 to 30 minutes. The stearic acid is melted, and when saponification of the oils is complete, is added in a thin stream to them. Retain this mixture at 75° to 80° C. for another 15 minutes. A sample should be removed and checked for free fatty acid content, and completeness of saponification, by analytical

(Continued on page 259)

Packaging Facilities

(Drugs and Toiletries)

Available in Canada

The Mennen Company announces to drug and toiletry manufacturers the availability of plant facilities in Canada for the packaging of powders, creams, liquids and tablets.

Enquire of George Mennen
The Mennen Company
Morristown, N. J.

MORRISTOWN 4-7100

The Correct Thiamine for Your Product

Merck Manufactures Three Forms of Thiamine to Meet Your Formulation Requirements

Easier formulating is assured the pharmaceutical manufacturer who specifies Merck Vitamin B_1 for his products. Both *Thiamine Hydrochloride* and *Thiamine Mononitrate* are available for oral preparations. For parenterals, Merck offers a specially prepared *Thiamine Hydrochloride for Ampuls* at no extra cost. Each of these crystalline vitamins is characterized by outstanding purity, uniformity, and dependability. Our technical staff is ready to assist you with your manufacturing problems. Inquiries cordially invited.

Vitamin B_1 Merck

THIAMINE HYDROCHLORIDE U.S.P. THIAMINE MONONITRATE U.S.P.
THIAMINE HYDROCHLORIDE U.S.P. FOR AMPULS

CALL MERCK FOR VITAMINS

Vitamin A Palmitate
Solution of Vitamin A Palmitate in Corn Oil
Crystalline Vitamin A Acetate
Riboflavin U.S.P.
Calcium Pantothenate Dextrorotatory

Niacin U.S.P.
Niacinamide U.S.P.
Vitamin B_6 Hydrochloride
Ascorbic Acid U.S.P.
Menadione U.S.P.

Vitamin K_1
Alpha Tocopherol
Alpha Tocopheryl Acetate
Choline Chloride
Crystalline Vitamin B_{12} U.S.P.

Research and Production for the Nation's Health

MERCK & CO., INC.
Manufacturing Chemists
RAHWAY, NEW JERSEY

© 1952—Merck & Co., Inc.

have you tried

Amerchols®

LANOLIN CHOLESTEROLS in their most active form.

The Amerchols are safe, non-ionic, natural **EMULSIFIERS, PENETRANTS** and **EMOLLIENTS.** They will help you achieve superior cosmetic and pharmaceutical formulations by markedly improving stability, texture, appearance and effectiveness.

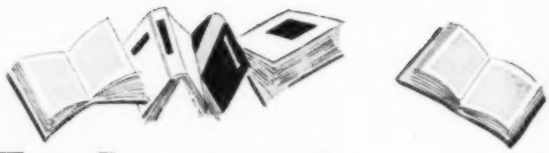
An Amerchol such as the multi-sterol, liquid **Amerchol L-101** enhances softening, penetrating and spreading activity while holding desirable moisture to the skin. The surface active Amerchols function at the interface in oil-in-water emulsions to bring about these unique effects on skin and hair.

The Amerchols are ideal ointment bases since they are stable, induce rapid drug release, and promote optimum healing rates.

WE KNOW OF NO CASE OF AN ALLERGY DUE TO AN AMERCHOL.

AMERICAN CHOLESTEROL PRODUCTS
• INCORPORATED •
MILLTOWN • • • NEW JERSEY

Write on your business letterhead for technical literature and suggested formulas.



Industry's Books...

Aids to Dermatology, *by Robert M. B. Mackenna, M.A., M.D., Physician in Charge Skin Department, St. Bartholomew's Hospital, London, and E. Lipman Cohen, M.A., M.B., Consultant in Dermatology to Old Church Hospital, Epping, Fourth Ed., (1954), 296 pp., Pocket Size, Bailliere, Tindall and Cox, London, Cloth,* **$2.25** This book has been designed to fulfil the double purpose of (a) providing a volume which will give the student a survey of many dermatoses and their treatment and (b) placing at the disposal of the newly qualified doctor in practice a handy guide to the diagnosis and treatment of skin disease. This fourth edition is greatly increased in scope. The section on treatment has been altered to conform with present customs in prescribing, and many alterations and additions have been made to the descriptions of diseases. A new section on hypostatic dermatitis has been added.

Modern Chemical Processes (*A Series of Articles Describing Chemical Manufacturing Plants, by the Editors of Industrial and Engineering Chemistry), In conjunction with the technical staffs of the cooperating Organizations, Vol. III, 276 pp., Illus., Reinhold Publishing Corp., New York, (1954), Cloth,* **$5.** This is the third volume in a series destined to prove a perpetual inventory of American chemical technology. Volume 3 contains the same factually authoritative pattern laid down by its predecessors. Twenty-three recently developed chemical processes, all now in operation on a full-scale production level, are described in the light of the following essential details: background, including commercial and technical history and the origin of present installation; description of plant installation, including design details of non-standard items; description of process and operation of plants; economics of process, including raw materials and processing cost breakdowns, plant investment and amortization; personnel; and future prospects, including technological improvement of the process and changes in the industrial picture. The practicing industrial chemist, the chemical engineer and the advanced student in these fields will find this volume, as well as volume I and II and future volumes to be issued every two years, a reference work of the very latest and most modern production methods in the chemical and process industries.

LATHER SHAVING CREAMS

(Continued from page 256)

methods. If free fatty acid content is low, (less than three per cent) the required amount of fatty acid should be added. The adjusted cream is then cooled to room temperature by the use of water coils, or similar cooling device. The balance of the water is added; the product is perfumed, and set aside to age for about two weeks, so that it will reach its equilibrium.

In perfuming lather shaving creams, more of the actual oils are needed to completely cover the soap odor. Many manufacturers are too economical when it comes to the perfuming of shaving cream. About one per cent of the perfume oil is usually necessary to give the product a pleasant, mild odor. Brushless shaving creams, on the other hand, require only 0.25 per cent to 0.4 per cent perfume, as they are essentially a vanishing cream type product, and such creams require less perfume than do the oily creams, or those containing special active agents. The large amount of perfume is used in lather shaving cream for two reasons. First, depending upon the specific odor used, more is required to sufficiently mask the odor of soap; and secondly, most perfume oils lose a certain amount of their potency upon prolonged shelf storage, so that it is necessary to add sufficient excess perfume to overcome this loss.

No. 3
LATHER SHAVING CREAM

Stearic Acid	32.31 per cent
Coconut Oil	3.69 per cent
Olive Oil	2.11 per cent
Palm Oil	1.81 per cent
Glycerine	7.29 per cent
Sorbitol	1.03 per cent
Potassium Hydroxide	7.13 per cent
Sodium Hydroxide	0.31 per cent
Triethanolamine	1.01 per cent
Water	42.10 per cent
Perfume	1.00 per cent
Menthol	0.21 per cent

Melt the stearic acid, coconut oil, olive oil, and palm oil in a stainless steel or glass lined container, equipped with a slow mixer, and heat to a temperature of 80° C. Place the water, alkalies, glycerin, and sorbitol in another container, and heat to about the same temperature. Run the water solution very slowly, in a thin stream, into the hot oils, with slow mechanical agitation. Maintain the 80° C. temperature for 30 minutes, at the same time, slowly stirring. Pull a sample for analytical control. Check the extent of saponification, and free fatty acid content. If saponification is incomplete, keep heating the soap. If fatty acid content is low, add enough myristic acid to make up the difference. Continue stirring until the cream has cooled to room temperature. Dissolve the menthol

(Continued on page 261)

have you tried

Modulan T. M.

The MODIFIED LANOLIN with new properties.

Modulan is chemically treated lanolin containing all the constituents of lanolin modified by a unique treatment to impart NEW and VALUABLE PROPERTIES.

Modulan forms clear solutions even in cold mineral oil and deposits hydrophobic, emollient films on skin and hair. These desirable protective films are waxy rather than tacky and are very pleasant to the touch.

Modulan is extremely hydrophobic — does not form greasy emulsions and is practically odorless. Because of its outstanding compatibility with oil-in-water emulsions and with soaps and shampoos, Modulan is particularly recommended for use in creams, lotions, baby products, hair preparations, make-up, and ointments.

CLINICAL INVESTIGATIONS HAVE INDICATED THAT MODULAN IS HYPO-ALLERGENIC.

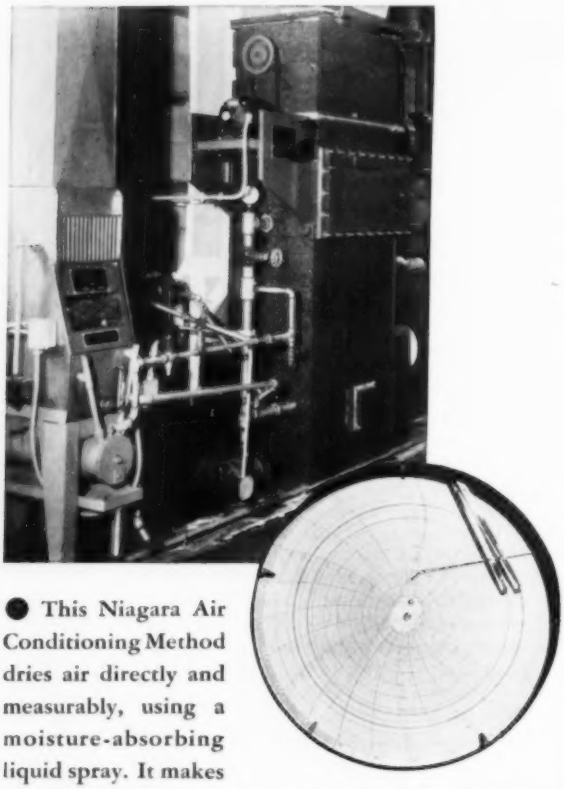
AMERICAN CHOLESTEROL PRODUCTS
• INCORPORATED •
MILLTOWN • • • NEW JERSEY

Write on your business letterhead for technical literature and suggested formulas.

EXACT CONTROL

of Moisture Content

To Improve Your Product or Protect Your Materials or for Processes or Tests



● This Niagara Air Conditioning Method dries air directly and measurably, using a moisture-absorbing liquid spray. It makes humidity control a separate function from lowering or raising temperatures and gives you precise control with thermostats alone; no moisture-sensitive devices are needed. You have simpler, more trustworthy, less expensive control instrumentation. Niagara precise-control installations have the best record for reliability.

Niagara Air Conditioning provides you with any temperature and relative humidity you need. Using "Hygrol" absorbent, it is not expensive to operate, saving the refrigeration commonly used to condense moisture and making re-heat unnecessary in most cases. It gives large capacity with compact, easily-maintained equipment. Ask for Descriptive Bulletins #112 and #121. Address Dept.—DC

NIAGARA BLOWER COMPANY

405 Lexington Ave. New York 17, N. Y.

District Engineers in Principal Cities of U. S. and Canada

Readers' Questions . . .

Antidiarrheal Preparation: *We make a prescription formula for doctors which contains in each fluid ounce:*

Kaolin	120 grains
Pectin	4 grains
Aluminum hydroxide	6 grains

in a base of peppermint water, glycerine and a small amount of saccharin.

This formula is not very palatable and is not stable. We make it in five gallon batches and it develops a gas and bad odor and taste. What can be done to prevent these conditions? NASHVILLE.

Your stability problems are almost certainly due to attack by micro-organisms, resulting in fermentation, and should be corrected by the addition of a preservative. One-tenth of one per cent of sodium benzoate (320 grains to five gallons) in your acid product should retard or completely prevent fermentation. I am afraid that bad taste is inherent in your combination of acidic pectin and chalky kaolin; lemon, orange or lime oil, or similar acid flavor may blend with the pectin but you probably will be most successful with flavor compounds obtained from your supplier.

Instant Neutralizers: *We would be much obliged to you for a formula for the new "Instant Neutralizers" for cold permanent waving.* STOCKHOLM.

We do not have any specific knowledge on this subject other than that potassium bromate has been used from the first as a neutralizer. Sodium perborate, urea peroxide are powerful and quick-acting oxidizing agents that will probably serve your purpose. You should also find a dilute aqueous solution of hydrogen peroxide useful.

PVP Liquid Hair Dressing: *We are interested in the use of Polyrinylpyrrolidone (PVP) in both liquid hair cream and clear liquid hair dressing. Could you give us information as to the required proportions to be used in these products?* MICHIGAN.

As you may know, PVP is available in a variety of viscosity grades and the proportion to be used for a certain effect will be dependent upon viscosity. Using the average pharmaceutical grade, designated as K 30 viscosity, about two per cent concentration should be effective in hair dressings, either clear liquid or cream. A plasticizer is useful to prevent flaking; glycerin or a glycol is useful in the clear liquid preparation while isopropyl myristate or similar low viscosity oil can be used in the liquid cream.

(Continued from page 259)

in the perfume and add it to the cooled cream. Stir until the odor is well dispersed; then place the cream in a storage tank and age for one to two weeks.

BIBLIOGRAPHY

1 M. A. Lesser, Shaving Preparations, Soap & Sanitary Chemicals, Oct. 51:44.
2 Lesser—Soap & Sanitary Chem. 10:51:44.
3 Thomssen—Modern Cosmetics, Third Edition, 47:417 Drug Markets, Inc.

FOOD AND DRUG ENFORCEMENT

(Continued from page 167)

and drug personnel throughout the country to cope with the problems that could result from atomic, biological, or chemical warfare attack. Emphasis will be placed on the problems of food contamination, decontamination, and salvage.

"One of our research projects is a test that will be conducted this year, in cooperation with the Civil Defense Administration, the U. S. Department of Agriculture, and several groups representing the food processing industry, on the effect of atomic explosion upon foodstuffs. It is essential to know what hazard, if any, exists in the consumption of food so exposed. Tests on a representative group of drugs was conducted in the fall of 1953 by exposure at varying distances from an atomic bomb explosion and the drugs were tested for deterioration. The report submitted to the Atomic Energy Commission was recently declassified from its earlier security restrictions."

Mr. Larrick submitted the following summary of enforcement activities of the FDA during the fiscal year 1954:

DOMESTIC

Number of factory inspections made:	
Food products	7,592
Drugs and devices	2,188
Cosmetics	281
Other acts and miscellaneous	58
	10,119
Number of warehouse surveys made:	
Food products	3,469
Drugs and devices	231
Cosmetics	4
Other acts and miscellaneous	4
	3,708
Total establishment inspections	13,827
Number of samples collected:	
Food products	11,227
Drugs and devices	9,968
Cosmetics	191
Other acts and miscellaneous	69
	21,455

Court actions instituted:

	Actions	Samples
Seizures		
Food products	836	1,227
Drugs and devices	218	346
Cosmetics and colors	1	2
Caustic poisons	2	2
	1,057	1,577

(Continued on page 262)

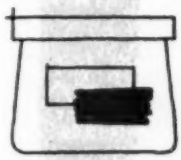
FOR THE DRUG AND COSMETIC INDUSTRY

ULTRAVIOLET ABSORBERS FOR SUN-TAN PREPARATIONS

hydroquinone diethyl ether
hydroquinone dimethyl ether

PERFUME AROMATICS

hydroquinone dimethyl ether
Compound 77-B



STABILIZERS

Tenox BHA for such oils and waxes as paraffin, stearic acid, mineral oil and lanolin

FINGER NAIL POLISH

film former
cellulose acetate
plasticizers
dimethyl phthalate
diethyl phthalate
solvents
acetone
ethyl acetate

For samples of these Eastman industrial chemicals, call or write to our nearest sales office.

Eastman CHEMICAL PRODUCTS, INC.
KINGSPORT, TENNESSEE
a subsidiary of Eastman Kodak Company

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; New York—260 Madison Ave.; Framingham, Mass.—65 Concord St.; Cleveland—Terminal Tower Bldg.; Cincinnati—Carew Tower; Chicago—360 N. Michigan Ave., St. Louis—Continental Bldg.; Houston—412 Main St. **West Coast: Wilson Meyer Co.,** San Francisco—333 Montgomery St.; Los Angeles—4800 District Blvd.; Portland—520 S. W. Sixth Ave.; Seattle—821 Second Ave.

CHLORHYDROL®

(Aluminum Chlorhydroxide Complex)

Actually custom-made to fit every anti-perspirant formula

EASIEST TO INCORPORATE IN YOUR ANTI-PERSPIRANT PRODUCTS

Chlorhydrol's availability in 5 forms—

- GRANULAR
- MEDIUM
- FINE
- IMPALPABLE
- 50% W/W SOLUTION

—makes it easy to introduce into almost any anti-perspirant formulation...

GIVES MORE ADVANTAGES TO YOUR ANTI-PERSPIRANT PRODUCTS

Only Chlorhydrol, among anti-perspirant astringents, offers all 7 of these advantages—

- mild acidity
- effective anti-perspirant action
- good deodorant properties
- excellent astringent qualities
- needs no buffering
- causes no skin irritation
- non-destructive to fabrics

FINE REHEIS CHEMICALS

Write today for free descriptive booklet.

1350

REHEIS COMPANY, INC.

Manufacturers of Fine Chemicals

BERKELEY HEIGHTS . NEW JERSEY

(*Continued from page 261*)

Court actions instituted:

	Actions	Samples
Criminal prosecutions instituted		
Food products	108	338
Drugs and devices	152	719
Cosmetics and colors	0	0
Caustic poisons	0	0
	260	1,057
Injunctions requested		
Food products	2	
Drugs and devices	14	
	16	
Total	1,333	
Criminal actions terminated	280	

FOOD AND DRUG ADMINISTRATION
FISCAL YEAR 1954
Imports

Samples collected	10,922
Lots inspected	25,105
Lots refused entry:	
Food products	3,154
Drugs and devices	1,271
Cosmetics, colors, miscellaneous	34
	4,459

MONOHYDRIC ALCOHOL ESTERS IN COSMETICS

(*Continued from page 168*)

tained within its walls does not freeze. If it should solidify, however, the chances are that the walls would break, and after thawing the preparation would be liquid instead of a solid cake in appearance.

Though the melting point of these esters are low as compared to the corresponding fatty acids they are not low enough to resist freezing during cold atmospheric temperatures. The simplest method of counteracting this tendency is to add a miscible oil with a much lower freezing point so that the freezing point of the oil mixture may be lowered to a level to resist freezing. Mineral is a good example.

The properties of the various esters vary with their structures, the principal difference being in their freezing points. Isopropyl myristate and isopropyl palmitate are perhaps the most commonly used because of their lower freezing points and also because of their greater resistance to hydrolysis, since they are esters of secondary alcohols. Their solubilities in alcohol are also greatly increased because of the branch chain present and are more soluble in ethyl alcohol than are the corresponding ethyl and methyl esters. The isopropyl esters may therefore be used in the still popular alcoholic hair grooming preparations, either in conjunction with castor oil to lower the viscosity of the evaporated film, or by itself if so desired. They may also be used in the emulsion type of hair grooming agency if there is an advantage to the use of this type of agency as against mineral oil. This is a point that could be argued pro and contra.

My own experience indicates that these esters are not as readily emulsified as is mineral oil—for example. Any attempt to replace mineral oil with isopropyl

myristate should therefore be checked and the possibilities are that further formula changes would have to be effected before the system is stabilized. However, these compounds are quite stable and will resist the pH range of products applied generally on the skin.

Esters of this type have had a long history of use in lipsticks. Since they are so limpid and of so low viscosity they easily cut the viscosity of what would ordinarily be essentially a castor oil vechicle. By so doing the formula could contain a larger concentration of waxes, thus increasing the resistance of the stick to warm weather temperatures. By cutting down on the viscosity it is also possible to procure an easier application. There are certain advantages in this method over the use of mineral oil since mineral oils in too great concentration are notoriously incompatible with castor oil.

Advantage is also taken of the characteristic solubility of the isopropyl esters in alcohol by their inclusion in the alcohol rub preparations. Since the film deposited is of a low viscosity and relatively non greasy—such an inclusion would introduce all of the desirable lubricating properties without introducing the objectionable and usually accompanying greasy properties.

There is some argument as to whether the characteristic non-greasy film properties of these agents are due to their low viscosity or to a partial absorption of the ester through the skin. Without wishing to enter the argument, I think if this is thought of as a desirable effect, and it has been proven that there are no irritational side effects, that the material should be used. As far as the author knows there have been no irritating side effects reported due to their use and they may be therefore thought of as replacements for natural fixed oils which themselves could not be used in certain applications because of danger of rancidification. There is no implication however that all the properties of the limpid oils may be duplicated by these substances but rather that at room temperatures they resemble these oils in their physical behavior and have many of their attributes without having any of their disadvantages. Since these are relatively pure substances they freeze into a crystalline pattern which for most purposes is undesirable, but the inclusion of foreign miscible substances have a tendency to detract from this behavior.

WIDER DRUG DISTRIBUTION

(Continued from page 169)

sell their goods openly to these stores as well as to other food outlets. It is not so many years ago that hardly any manufacturers of these products dared to sell the grocery stores openly because of fear of retaliation on the part of the retail druggist. This fear is a thing of the past, and cosmetics and toilet preparations—except those sold by selective distribution—are available to all manner of outlets.

The basic reason why such a change was possible is the great growth of the cosmetic industry. This great growth was naturally part of the sharply higher eco-

To Your Cosmetic Powders

Add "KIND-TO-THE-SKIN" Properties

with Horse Head U.S.P. ZINC OXIDE

Your dollars work two ways when you use Zinc Oxide in your face and body powders . . . because Zinc Oxide imparts *both* cosmetic and pharmaceutical properties:

1. COSMETIC PROPERTIES

High Covering Power
Zinc oxide gives more covering power *per dollar* than any other high covering pigment used in cosmetic powders.

Deodorant
Zinc oxide neutralizes perspiration acids.

Sunburn-ray screen
Zinc oxide is opaque to ultraviolet light.

2. PHARMACEUTICAL PROPERTIES

Zinc oxide is widely used in dermatology in the form of zinc oxide ointment and calamine lotion.

It owes its popularity, according to one recognized authority,* to a combination of at least three qualities: it is non-toxic, protective and mildly astringent.

* *The Dispensatory of the United States of America, 1950 Edition*

HORSE HEAD PRODUCTS

THE NEW JERSEY ZINC COMPANY
Founded 1848
Products Distributed by
The New Jersey Zinc Sales Company
New York · Chicago · Boston
Cleveland · San Francisco · Los Angeles

nomic picture in the years during and following World War II, but such a sharp increase in sales of cosmetics could not have been possible if the industry had restricted itself to its previously small number of outlets. Because of this growth in the cosmetic industry, the drug store did not suffer greatly, if at all, from the sale of cosmetics and toiletries through other outlets. Also they had the sharply increased prescription business to bolster their volume.

With the sharp growth in the cosmetic business resulting largely from a great broadening of distributive outlets, it is only natural to anticipate that a large increase in the sale of drug preparations could result from a similar broadening of outlets for the sale of drug products. And it is possible that such an increase in the sale of drug preparations might not unduly affect the retail druggist. For it is certain that not a very high percentage of these other outlets would carry a broad line of drug preparations. Rather would they largely restrict the products which they handle to fast sellers, or at least to products which have a wide application.

However, the fight for wider distribution of drug products which came into the open with the suit of the Proprietary Association for a declaratory judgment against the New Jersey State Board of Pharmacy, is continuing. It will be recalled that by means of this suit, the Proprietary Association had hoped to obtain from the court a definition of drug products which would greatly widen the distribution of the products of the members of the association. However, after obtaining a satisfactory definition from a lower court, a reversal by the highest court in the state ruled that such relief could only be obtained by legislative action. Now the association is taking steps in various other states to try and obtain legislation that will accomplish the same result and leave the manufacturers free to distribute their preparations through all manner of outlets.

Legislation introduced in North Dakota and Iowa, if enacted, will establish wider distribution of drug preparations in those states. If attempts to enact permissive legislation for the general sale of over-the-counter drug preparations are successful in these states, the demand for such legislation in other states will soon arise. Naturally, enactment of such legislation in one or two states will give both the manufacturers and the retail druggists an idea of the advantages or disadvantages of such a change in distribution. If the anticipated increase in the sales of drug preparations does not occur, the manufacturers will take little interest in further attempts to obtain similar legislation in other states. Also the retail druggists might not oppose such legislation so vigorously if the general volume of these preparations increases, but the drug stores do not suffer any loss of volume. However, it remains to be seen how the legislators in the various states feel about the legislation.

The question naturally arises whether the pharmaceutical manufacturers, practically all of whom have over-the-counter products would market their products through such a widened distributive system, if restric-

Plymouth ESTABLISHED QUALITY SPECIALTIES

Ozokerite Waxes Both White and Yellow Ozokerite in a variety of melting points are available. We believe oil retention properties to be better than any other similar products commercially available.

Ceresin Waxes Plymouth White Ceresin Waxes are a standard of quality for the formulation of the finest cold creams. These waxes are available in a range of melting points and degrees of absorbency.

Crystal "E" Oil This 70 Viscosity Technical White Oil (meeting U.S.P. Acid Test) is considered more advantageous for many cosmetic formulations than higher viscosity N.F. Oils.

Special Petrolatums If natural Petrolatums will not "do the job", Investigate our Special Petrolatums tailored to individual requirements.

Lanolin, U.S.P. and Cosmetic.
Petrolatum U.S.P., all grades.
Beeswax, White and Yellow U.S.P.
White Mineral Oil U.S.P. and N.F., all grades.

PLYMOUTH

M. W. PARSONS-PLYMOUTH, Inc.

59 BEEKMAN STREET
NEW YORK, N. Y., U.S.A.

Telephone BEEKMAN 3-3162—3163—3164
Cable Address: PARSONOILS, NEW YORK

tions were removed. However, since these manufacturers do not advertise their products to the public, the answer seems to lie in the fact that there would probably not be sufficient demand for most of these products to cause them to be handled by these other outlets. There are many drug firms today which have both ethical and proprietary divisions. Therefore, the problem would be solved for these firms by inclusion in the proprietary division of all products which can profitably be marketed through advertising directly to the public. Aside from this situation, over-the-counter products of pharmaceutical manufacturers would, by and large, be sold exclusively by the retail druggist. Naturally there would be exceptions to this condition, depending on the particular product of an ethical manufacturer, and upon its popularity in certain areas. One can well imagine certain popular vitamin preparations, antacids, and some other types of products of certain ethical manufacturers being included in the stocks of some stores other than drug stores.

The general interest in health of the people of this country today, as well as the greatly increased knowledge of the people of this country concerning health matters seems to point to the likelihood of a wider distribution of drug preparations be demanded. Over-the-counter drug preparations today have their active ingredients printed on the label, and they carry adequate directions for use as well as necessary warnings against misuse. They are no longer the mysterious concoctions of the past, and by and large, the people who buy them understand how to use them, and when and why they should use them.

It is quite possible that the drug industry would experience a real increase in volume if the restrictions surrounding the sale of drug products were relaxed. Furthermore, with the Food and Drug Administration administratively determining what drugs are safe for self-medication, it is difficult to show such relaxation of restrictions would result in anything but benefit to the people of this country. It should also be recalled that the arguments presented during the long course of the declaratory judgment case in New Jersey convinced the judge, before whom the case was tried, that the restrictions in the State of New Jersey should be relaxed. It was only on the basic point of law in which the Supreme Court of New Jersey held that the court had no right to give relief from the situation, that the final decision turned. Therefore, it would appear that the case of the industry is a good one, and that it can successfully be presented to the legislatures of the various states.

A NEW MERCAPTAN-DISULFIDE MECHANISM

(Continued from page 175)

Values of 0.6 to 0.8 are commonly achieved on waved hair, but values closer to unity than this cannot yet be accomplished in actual practice. An index of 0.5 or

Beat Competition
with
Better Compounds

W. J. BUSH & CO., Inc.
Essential Oils
19 West 44th STREET, NEW YORK 36, N. Y. • MUrray Hill 7-5712

For low-cost, automatic production-line package coding...

Imprints code-dates and other changeable identification legends on cans, jars, bottles as an integral production-line operation... during filling, capping, cartoning, etc. Makes sharp, permanent, accurately located marks on bottom, top or sides — even recessed surfaces. Fully automatic, this machine synchronizes with speed of other mechanized operations... adjusts for packages of different size... features 1-minute changeover for new copy.

Write, wire, phone for more details

Gottscho **ADOLPH GOTTSCHO, INC.**
Dept. C, Hillside 5, N. J.

Automatic CODING, MARKING, IMPRINTING MACHINES

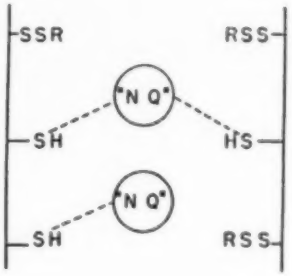
In Canada: **RICHARDSON AGENCIES, LTD., Toronto & Montreal**

for UNIFORM PURITY
UNIFORM TEXTURE
UNIFORM WHITENESS

Experimental data and practical manufacturing experience of nearly 100 years' specialization in beeswax and beeswax compounds are at your service without cost or obligation. Write about your beeswax problems to **WILL & BAUMER CANDLE CO., INC., Syracuse, N. Y. Est. 1855**

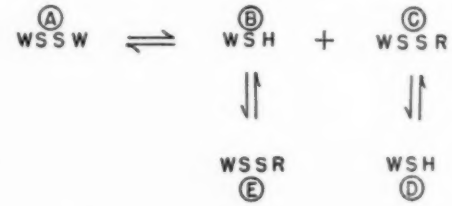
Spermaceti — Ceresine — Red Oil — Yellow Beeswax — Composition Waxes — Stearic Acid — Hydistear

lower indicates substantial damage to the hair. On reduced hair, without any "neutralization" at all, the index falls away to 0.2 or thereabouts.



SLIDE 5

Now I am going to show you again the three-way equilibrium equation which we use to describe human hair in any degree of reduction or neutralization, and I am going to equate algebraically the components of this system to values which can be determined analytically.



1) $$(\text{CYSTINE})_0 = A + B/2 + C/2 + D/2 + E/2$$

SLIDE 6

This is a simple sulfur balance. It says that the original cystine content of the (untreated) hair [plus the original cysteine; as a refinement we add the two to get what we define herein as "$(\text{Cystine})_0$."] must be equal, after subsequent treatment, to the sum of components A + one-half the sums of components B, C, D and E. The last four are divided by two because each contains only one-half of an original keratin cystine group.

2) $$(\text{CYSTINE})_{\text{anal.}} = A + C + E$$

SLIDE 7

This states that in any given tress of hair the total cystine content which will be picked up by our method of cystine analysis, referred to above, will equal the sum of components A, C and E. C and E are mixed disulfides, but they are immobilized through being chemically attached to the polypeptide chain, so that they become available for reaction with the phosphotungstate when the hydrolysis of the protein is carried out, and thus analyze as cystine.

3) $$B + E = C + D$$

SLIDE 8

Since B and C are formed initially in equimolar quantities, and since D and E can then only be formed at the expense of C and B, respectively, this relationship is obviously rigid.

$$4) \qquad (\text{CYSTEINE})_{anal.} = B + D + E\,\frac{D}{D+C} + C\,\frac{B}{B+E}$$

SLIDE 9

The last two terms would not be required were it not for the idiosyncracies of our NQ analysis. These terms say that the analytical values for cysteine which we read will be falsely increased to the extent that component E occurs opposite component D, or component C occurs opposite component B. If neither C nor E is present at all, so that all of the broken keratin cystines end up as keratin cysteines (B and D), the last two terms in Equation 4 become zero and the analyzed cysteine value is reduced to the true cysteine value.

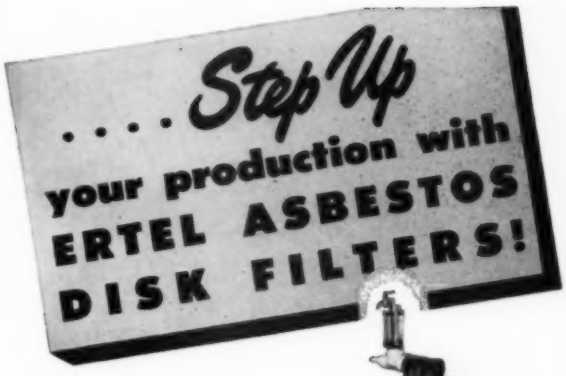
$$5) \qquad B : E = D : C$$

SLIDE 10

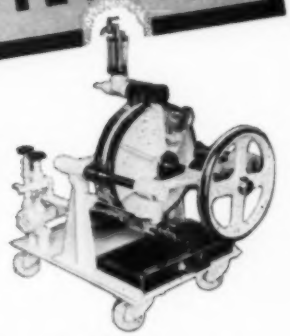
Whereas we are prepared to defend Equations 1 through 4 as precisely true (except in those cases where hair is treated with such powerful oxidizing agents as to convert cystine sulfur to sulfones, sulfinates, and beyond to sulfonates), we hasten to state that Equation 5 is not even a good approximation. Equation 5 is correct *only* after equilibrium has been reached (from opposite directions, note) in the B-E reaction and also in the C-D reaction. In real life, and especially in professional or beauty shop permanent waving, sufficient time rarely elapses to permit these conditions to exist. Conventional reducing times in the beauty shop get down to as little as four or five minutes, and currently the vogue calls for the neutralization step to be completed in eight minutes or so. The work of Bersin and Steudel strongly suggests that the C-D reaction proceeds more rapidly toward equilibrium than the B-E reaction. I am sorry that I am not permitted to produce for you our own improvement of Equation 5, but since our improvement is based on our ideas of the average processing times of our customers, undoubtedly your own improvements of Equation 5 will be better suited to your individual uses. You should make rate determinations for both the B-E reaction and the C-D reaction, and then apply your own time estimates to get a more precise Equation 5.

Now, when we make the false assumption that the B-E and C-D reaction have each reached equilibrium (which is what Equation (5) says) it has the effect of setting B equal to D and C equal to E. If this were true, only three "unknowns" need appear in the equations, and indeed the B-E reaction need not be recorded at all in the basic chemical equilibriums we have proposed.

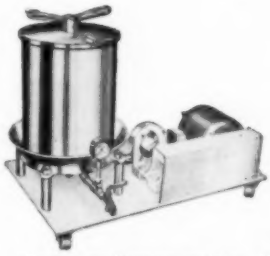
But it is *not* true—not even *close* to true. We show the three-way equilibrium with five components because these components do not occur with equal frequency under real-life conditions.



1. EBW MODEL PORTABLE FILTER



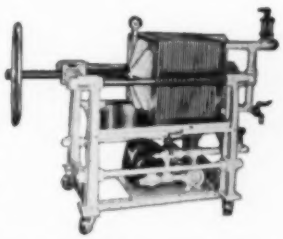
A highly efficient, readily portable filter that meets requirements for smaller capacities. Perfromance-proven over the years in many hundreds of plants throughout the world. Perhaps Ertel EBW model can economically speed up your production. Ask for full particulars — an EBW is in operation in your vicinity, right now!



2. ECD MODEL ENCLOSED DISK FILTER

Typical of Ertel craftsmanship is this Positive Seal Multi-Purpose Disk Filter. The outstanding feature of independent filtering elements provides positive seal of any type filtering medium. Cylinder prevents loss of liquid — particularly well adapted for volatile liquids as well as many other ordinary filtering requirements.

3. EU MODEL UTILITY FILTER



The Ertel Filter that's designed to use asbestos filter sheets, filter cloth, filter paper or filter cloth and filter aid. Standard units in bronze, nickel plated, stainless steel or hard rubber circulatory system. Comparison and operation records prove the EU Model unmatched in design, versatility and operation-life. Experience has shown that the great majority of filtration problems can be solved by your consultation with our engineers. May we help you?

ASK FOR ILLUSTRATED CATALOG

Describes the complete line of precision built Ertel Liquid Handling Equipment for Industry.

ERTEL ENGINEERING
CORPORATION

KINGSTON 1, NEW YORK
Branch Office & Showroom Located in New York City

COMPLETE LINE OF
Liquid Handling Equipment

ERTEL

Certified
Cosmetic Colors

for

Lipsticks • Face Powders
Rouges • Compacts
Lip Pomades • Nail Polishes

also

Purified Iron Oxides
Purified Titanium Dioxide
for Drugs and Cosmetics

Let our modern scientific laboratories assist in your color problems.

Samples Cheerfully Submitted.

Ansbacher–Siegle
CORPORATION
Manufacturers of Fine Colors

General Offices, Factory and Laboratories
ROSEBANK, STATEN ISLAND, NEW YORK, N. Y.
Boston, Chicago, Cleveland, Louisville, Los Angeles,
Philadelphia, San Francisco

AMERICAN AROMATICS, INC.

Telephone
GR. 7-6313

24 East 21st St.
New York 10, N. Y.

SQUEEZED BY LAVENDER PRICES?

The high price of the Spike-Lavandin-Lavender group is today forming serious examination of soap, cosmetic and lotion formulae. American Aromatics, Inc., having developed a series of successful Lavender group extenders at the time of the Korean price emergency, suggest to perfumers and purchasing agents their consideration of these tested, low cost Extenders.

SAMPLES ON REQUEST

SOLE NORTH AMERICAN REPRESENTATIVE OF SYNAROME PRODUCTS

I want to be sure that everyone understands this. While we are withholding a certain refinement from you, we do not feel that it is material to the principles advanced in this paper, nor do we feel that, having called the need for the refinement to your attention, you will find the obstacle of substance.

Going on, we have now five equations containing five unknowns, and these can, of course, be solved simultaneously by conventional algebraic methods. *This means that having determined analytically the cystine content of the original hair, and having redetermined the cystine content after the treatment under study, and also determined the cysteine content, it is possible to calculate the numerical frequency of occurrence of each of the components shown in Slide 3.*

As will become more apparent when we get to talking about the oxidation step, the nature and juxtaposition of the terminal groups formed by the severance of the cystine bond is of controlling importance. The following equations describe the frequency of occurrence of the three possible patterns:

6) $$SH - HS = B\frac{D}{D+C}$$

7) $$SH - RSS = E\frac{D}{D+C} + C\frac{B}{B+E}$$

8) $$SSR - RSS = E\frac{C}{C+D}$$

SLIDE 11

Now before I get into our experimental data, I want to talk for a few minutes about the impact of an oxidizing agent on this system. Let me show you a new slide, which repeats sections of two previous slides:

SLIDE 12

In the first place, it is obvious that the oxidation step can no longer be regarded as a simple reversal of the reduction step. An oxidizing agent can undoubtedly couple two *adjacent* sulfhydryl groups (B opposite D), but this is the only regeneration of cystine which it can accomplish directly. Where an SH group exists opposite an SSR group (B opposite C, or D opposite E), the two may interact spontaneously to yield the cystine bond plus a molecule of the mercaptan reducing agent. Where two of the mixed disulfide terminal groups are opposite to each other (E opposite C) the oxidizing agent is powerless to rebuild the cystine bond.

A great many attractive avenues for investigation appear as one contemplates this picture. Assume for the moment that the sole target is to rebuild ingredient A.

B and C can react directly to yield this result, as can also D and E. B and D can react if an oxidizing agent is present. A by-product of the first two reactions is RSH, which can thereafter react with A to yield B and C again. This is unfortunate, but not as unfortunate as the result of an oxidizing agent reacting with two molecules of RSH. *Any RSSR which is present will tend to increase the concentration of C and E through reacting with the B's and D's, and the most direct and simplest way to avoid this disaster would appear to be to minimize the concentration of RSSR present.*

It is probably unnecessary, but I would like to stress once more the *immobility* of the terminal groups shown on the left in the above diagram. With so many reactions in competition, one would ordinarily not expect any significant amount of direct oxidation of B and D to take place: this is a trimolecular reaction, dependent upon chance simultaneous (or successive) collisions of three molecules, whereas the other reactions are bimolecular. However, in this case, the tri-molecular reaction is facilitated by the fact that B and D are anchored in ideal proximity. They don't have to travel to find each other.

The laboratory experiments which we have decided to report here were designed primarily to demonstrate the applicability of the system I have outlined, and secondarily to show the devastating effect of dithio or other organic disulfides on the rebuilding step.

A large shock of virgin hair was divided into twelve two-gram tresses. Forty-five individual fibers were suitably mounted on celluloid tabs and their load-elongation hysteresis curves up to 20 per cent stretch were measured.

Three tresses of hair were analyzed for cystine content and also for cysteine content, giving us initial values for A, B, C, D, and E before chemical treatment. Three experimental processes were carried out in triplicate on the remaining tresses:

Experiment 1

Three tresses were reduced on the rods using a conventional waving lotion which was 0.75N in ammonium thioglycolate and 0.70N in ammonium hydroxide. Embedded in these tresses were fifteen of the individual calibrated fibers (five in each tress). The reduction treatment was carried out for twenty minutes under a nitrogen atmosphere, after which the process was "stopped" in absolute isopropanol. Two cystine and cysteine analyses were made on each of the three tresses, and the fifteen calibrated load-elongation fibers were re-run to give us the 20 per cent index values.

Experiment 2

Three tresses were treated as in Experiment 1, and thereafter the reduced fibers were thoroughly rinsed with oxygen-free water and then treated with 1N sodium bromate for an additional forty-five minutes in a nitrogen atmosphere. Thereafter the analyses described in Experiment 1 were carried out.

For a Lasting and Warm
Odor

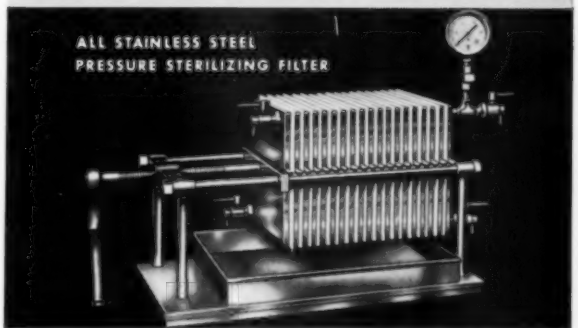
MUSCOLINE

A FIXATIVE PREPARED FROM
ANIMAL PRODUCTS

Ph. Chaleyer, Inc.

160 East 56th St. New York 22, N. Y.
Plaza 3-8618

SANITYPE
The Only Filter
Fabricated of Plate and Bar Stock
Developed Specifically for The Pharmaceutical Industry
Used in the Processing of
ANTITOXINS · VACCINES
BLOOD SUBSTITUTES · ANTIBIOTICS



ALL parts which contact liquid are *polished* . . . making cleaning easy. Quickly opens and closes. Can be used for *double or triple filtration.* Uses all types of filter pads, paper or cloth. The *original* SANITYPE has a proven record of performance. Specify SANITYPE as most leading pharmaceutical manufacturers have done.

Write for Catalog

F. R. HORMANN & CO., INC.
17 STONE ST. NEWARK 4, N.J.

Experiment 3

Three tresses were reduced as in Experiment 1 and thereafter rinsed for two hours with an aqueous solution of 2.0M ammonium dithiodiglycolate at pH 9.3 in a nitrogen atmosphere. Thereafter the analytical measurements described in Experiment 1 were carried out.

The analytical values obtained are tabulated below. All of the data are given as millimoles per gram of hair.

Expt. No.	Treatment	$I_{20\%}$	$(SS)_A$	$(SH)_A$
Control	Virgin hair	1.000	0.676*	0.019*
I	Thio reduction	0.357	0.558	0.270
II	Thio; O_3 free H_2O_2 1N $NaBrO_3$	0.665	0.651	0.068
II	Thio; 2.0M dithio	0.497	0.736	0.038

SLIDE 13

An analysis of the individual values reported shows that the Probable Error in the cystine determination was ± 0.006, the Probable Error in the cysteine analysis was ± 0.003 in the case of Treatment 1, and ± 0.0016 in the case of Treatments 2 and 3, and the Probable Error in the 20 per cent index value is ± 0.009.

Examining these figures, I moderately regret that we didn't use somewhat stronger waving lotion (so as to get a higher level of reduction) and somewhat stronger bromate solution (so as to wind up with a lower cysteine value in Experiment 2). However, the comparative results suit our purpose very well.

It is obvious that a direct consideration of these values does not yield a consistent picture as to the efficacy of a neutralizing process. Experiment 3 has given us substantially lower cysteine values than Experiment 2 and substantially higher cystine values than Experiment 2, and yet the 20 per cent index shows that the integrity of the hair has been very seriously damaged.

The values of A, B, C, D and E which were calculated from the analytical results shown on Slide 13 are given below.

Expt. No.	Treatment	$I_{20\%}$	A	B-D	C-E
Control	Virgin hair	1.000	0.676	0.0095	0.000
I	Thio reduction	0.357	0.550	0.132	0.004
II	Thio; O_3 free H_2O_2 1N $NaBrO_3$	0.665	0.651	0.034	0.000
III	Thio; 2.0M dithio	0.497	0.616	0.010	0.060

SLIDE 14

The Probable Errors derived from an analysis of the data for Experiment 1 are ± 0.012 for A, ± .006 for B and D, and ± 0.006 for C and E. The Average Deviations in the analyses following Experiments 2 and 3 were substantially smaller, so that the Probable Errors came out to be approximately half the Probable Errors given for Experiment I.

These results are typical of those which we have obtained in a large number of experiments of this general type. We see that the reduction step produces very little (or none) of the mixed disulfides, and that if the dithio concentration is reduced to nil by an oxygen-free water rinse, the mixed disulfide content in the system is zero. On the other hand, if dithio is present (admittedly in unrealistic quantities) the C and E components become very large, and effective rebuilding of the cystine bond (A) is impossible. Looking at these values one can see that Procedure 2 is a *much* more efficient way to rebuild the cystine bonds than is Procedure 3.

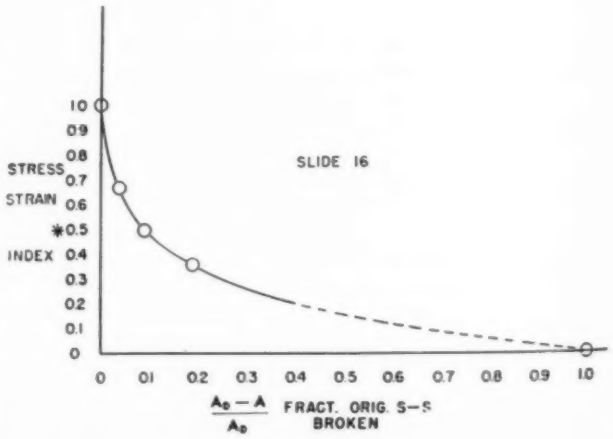
The following table shows the distribution of the broken cystine bonds, expressed as absolute value in mM/g of hair, and also as percentages of the total.

EXPT. NO.	TREATMENT	SH HS	SH RSS	SSR RSS	TOTAL
CONTROL	VIRGIN HAIR	0.0095 100%	0.000 0%	0.000 0%	0.0095
I	THIO	0.128 94%	0.008 6%	0.000 0%	0.136
II	THIO; O_3-FREE H_2O_2, 1 N $NaBrO_3$	0.034 100%	0.000 0%	0.000 0%	0.034
III	THIO; 2.0 M DITHIO	0.001 1%	0.017 25%	0.051 74%	0.069

SLIDE 15

The values for Experiment 3 are not typical; usually we have seen them distorted to the order of zero per cent, 15 per cent, and 85 per cent respectively. Note that the hair following Experiment 3 is actually in much poorer condition than the hair following the reduction step, in the sense that the cystine bond cannot be directly rebuilt by the introduction of an oxidizing agent. Extensive hydrolysis of the mixed disulfide terminal groups must take place before any substantial cystine formation can be accomplished.

Significantly, supplementing the dithiodiglycolate treatment in Experiment 3 with the application of an oxidizing agent, has only a very minor effect upon the mixed disulfide content. The *only* way to get rid of those "RSS-SSR" configurations is to introduce a reducing agent which can convert the mixed disulfides back to keratin cysteine terminal groups. The logic of prescribing a *waving lotion* (with subsequent neutralization, of course) as a treatment for badly damaged hair is not, may I say, generally appreciated in the field!



SLIDE 16

*These values for our control (untreated) hair give $(SS)_0$ for Equation 1 = 0.676 + 0.0095 = 0.686, which value was used in the calculations shown in the following tables. This was explained in the earlier discussion of Equation 1.

Slide 16 is a graph showing the relationship of the 20 per cent index to the true cystine content of the hair. I won't argue that the points registered justify the convex shape of the curve; but we have made this kind of determination many times, and as a result we are satisfied that this curve does bend in the way shown. (In this connection, however, the work of Alexander et. al.[6] is in *apparent* disagreement.) The asterisk, off the left-hand side of the ordinate, is the point which one would record if one used the cystine value determined in Experiment 3 rather than the true cystine value which was calculated out as ingredient A.

Conclusions

1. The existence of mixed disulfides in hair which has been treated with ammonium thioglycolate waving lotions is proven.

2. The reactions between thio and cystine linkages of hair are bimolecular, and proceed toward cysteine and dithiodiglycolate in two stages.

3. The tendency for the cysteine residues formed in the first stage of the reduction reaction to be converted to mixed disulfides through reacting with dithiodiglycolic acid is governed by the relative and absolute concentrations of thio and dithio in contact with the hair.

4. The stress-strain index is found to vary directly with the *actual* disulfide cross linkages. No recognizable relationship holds between the stress-strain index and the *apparent* disulfide cross linkages.

5. The oxidation or neutralization of reduced hair is not in any sense a simple reversal of the reduction step.

6. The presence of dithiodiglycolates in the waving lotion or during the neutralizing step is shown to be highly undesirable.

7. Finally, as evidence of the strength of our conviction that dithio is an undesirable constituent in a cold wave, I want to report that we have struggled at length to minimize the dithio content of the thioglycolic acid that we manufacture, and we have succeeded to the point that the dithio content of our current production is not detectable by chemical analysis.

REFERENCES

1. Bersin and Steudel, Ber., 71B, 1015 (1938).
2. Kubu and Montgomery, T. R. J., 22 (12), 778 (1952).
3. A. Schoberl, Naturwissenschaften, 40:390-91 (1953).
4. M. Calvin, Univ. of Calif. Radiation Lab. 2438:26 (Jan. 14, 1954.
5. Sookne and Harris, J. Res. Natl. Bur. of Stds. 19:535 (1937).
6. Alexander, Fox and Hudson, Biochem. J. 49:129 (1951).

Discussion

MR. WILLIAMS: After the reduction treatment you reported a 20 per cent index of 0.357, whereas when the reduction was followed with a treatment with 2 molar dithio the index rose to 0.497. If you are not going to oxidize, it would seem to be preferable to have dithio present. Is this correct?

MR. WHITMAN: Well, there is some rebuilding that takes place when dithio is introduced. At the moment that the reduction is completed, most of the broken cystine bonds appear as SH groups opposite SH groups

BENJ. FRENCH, INC.

ESSENTIAL OILS - - AROMATIC CHEMICALS

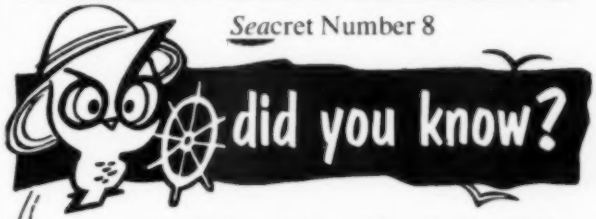
DESCOLLONGES PRODUCTS

TUBEROSE FLEURS

This warm floral note, powerful and lasting, represents a remarkable synthesis of the Tuberose flower and is interesting in many modern compositions.

160 FIFTH AVE. — NEW YORK 10, N. Y.

*Sea*cret Number 8



. . . that the thermally-reversible gelling characteristic of SeaKem "Colloids Out of the Sea"* can contribute important improvements to such products as calomine lotion? The addition of very low concentrations of the proper SeaKem extractive, then continuing agitation during cooling, results in an interrupted gel structure that stabilizes such suspensions extremely effectively.

* SeaKem is the registered trademark for the standardized hydrocolloids obtained from Irish Moss by the Seaplant Chemical Corporation. Extracted and refined by rigidly controlled processes which insure dependable uniformity and purity, SeaKem Colloids are contributing importantly to a variety of drug, cosmetic and pharmaceutical products. In addition to their unique effectivenss in a wide range of stabilizing functions, SeaKem Irish Moss extractives possess interesting emollient and demulcent properties.

Write today for more information.

Seaplant CHEMICAL CORPORATION

63 David Street, New Bedford, Mass.

for YOUR PRIVATE BRAND PRODUCT
MANUFACTURED
and
Quality Controlled
EVERY STEP FROM IDEA TO FINISHED CREATION.
PERFECT PACKAGING OF YOUR PRODUCT.
NO CUSTOMER TOO LARGE OR TOO SMALL.
Counselling, Designing and Art Service for every package.
Our own Label Printing and Designing Plant.
Bottle and Jar Decorating Equipment on the Premises.
CREAMS, LOTIONS, LIQUIDS, SHAMPOOS, UP-TO-DATE FORMULATIONS.
CONTRACT FILLING, PACKAGING TO SPECIFICATIONS.
WINDSOR CHEMICAL LABORATORIES
161 LEVERINGTON AVE., PHILADELPHIA 27, PA.

Van Dyk & Company, Inc.

Manufacturers of

RAW MATERIALS

for

PERFUMERY

and

COSMETICS

for over half a century

Belleville 9, New Jersey

(see Slide 15). When you add dithio to the system the equilibrium begins to swing and an SH group is converted to an RSS group. What happens next is a contest of two reactions. The RSS group which has been formed can react with the SH group which is opposite to it, giving you back a cystine bond and a molecule of thio. On the other hand, instead of that, the SH group which remains opposite to the one you have just converted to an RSS group may now react with a second molecule of dithio. If this happens the reaction stops permanently because you have two SSR terminal linkages opposite each other.

QUESTION: Do you think that dithio is more damaging to the reversal when substantial concentrations of thio are present?

MR. WHITMAN: Yes, I do, and after you have studied our equations you will see why. At one time we tried to find out what concentration of dithio we could stand. I think that must have occurred to everyone in the room because that certainly is a logical thing to go after. We found that the answer depends as much on the concentration of the reducing agent that is present as on the concentration of dithio. I know of one set of figures, which is now on its way to publication in another paper, where we had present *in the waving lotion* 0.5 molar dithio, and the mixed disulfide content was very close to the same as that after the 2 molar treatment I have reported on today.

MR. WILLIAMS: May I ask one more question? Isn't there always dithio present in the system after the reduction of the hair with thio?

MR. WHITMAN: Yes, dithio is present.

MR. WILLIAMS: About 20 per cent of th thio roughly has gone to dithio?

MR. WHITMAN: I don't think it's that high. Ideal operations, in our opinion, is down around the 12 per cent level, but obviously that is going to depend on the volumes of the lotion you use and also on the strength of the lotion.

MR. WILLIAMS: If anybody should by error make a thio lotion that contained about one per cent dithio, this more or less is an insignificant amount compared to the 12 per cent you end up with at the end of the treatment?

MR. WHITMAN: No, it is not insignificant at all. The way the dithio is reported commonly in the field is as a per cent based on the per cent of the thio, so that in a waving lotion which contains, say, six per cent ammonium thioglycolate we would record a little better than 14 per cent of dithio on the weight of the thio. We know that this would be a grossly defective waving lotion. (We once destroyed a batch of waving lotion because the dithio content was over six per cent on a 100 per cent TGA basis.)

We now think that we know the reason for this. You will remember that Slide 15 showed *none* of the SSR-RSS configurations after the thio reduction, and this in spite of the presence at the end of a significant concentration of dithio. As the dithio content of the waving lotion, *prior to its application to the hair*, goes up, it

has the effect of changing the distribution of the configurations shown in Slide 15 to the right. An increase of the SSR-HS content at the expense of the SH-HS content does little harm, because either group will speedily react in the neutralizing process to give you back your original cystine bonds. But if the dithio content gets high enough to distort the distribution to the point where the SSR-RSS configuration appears, each one of these pairs represents a cystine bond which is not directly recoverable.

The experiments described in this paper are not revealing as to this point. But the damaging effects of dithio *in the original waving lotion* are, in our opinion, well established. We have found that we cannot tolerate a dithio content in our waving lotions in excess of four per cent or thereabouts, and we originally found this in the beauty shop before we know how to carry out the analyses and calculations which I have described.

I am new in this field. I first started working on cold waving about seven years ago, and one of the first things that intrigued me was the fact that if you take a waving lotion and add dithio to it (or if you take a 10 per cent waving lotion and allow it to decay to the point where it is eight per cent thio and two per cent dithio) you then have a waving lotion which is without parallel as far as waving hair is concerned. It isn't just *weaker*—it is way off in performance.

Most of the beauty supply manufacturers know that dithio acts as a poison to a waving lotion. The reason that we were working on this factor seven years ago was, as most of our competitors will remember with amusement, that we were working on a manganese-catalyzed permanent waving lotion. The manganese catalyzes the oxidation of thio to dithio so rapidly that if a beauty operator takes a lotion and tries to wind the hair with it, when she has the hair wound the lotion is too "weak" to impart a wave. The way to overcome this *apparently* is to use a higher concentration of thio in the waving lotion in the first place, so that after the hair is wound sufficient thio remains to satisfactorily reduce the cystine linkages. But you can't do it that way because of the presence of substantial quantities of dithio.

In short, if the dithio is present in the original waving lotion beyond some tolerable level, you cannot rebuild the cystine linkages by conventional methods of neutralization, you cannot get your 20 per cent index values up to acceptable heights, and when you carry out the calculations reported in this paper you find that the C's and E's have run way up in the air, and you are left helpless, with a substantial concentration of the SSR-RSS configurations.

MR. HAYGOOD: There are two questions I have. Do you think that perhaps some of the difference between the bromate and the dithiodiglycolate solution was due to the wash with the oxygen-free water and not due to the re-oxidation? For example, if you had washed both samples with oxygen-free water and then treated them respectively with bromate and dithiodiglycolate, do you think you would have gotten the same results?

Atlantic City's
Newest Convention Hotel

The Jefferson with its new facilities for handling all convention groups is fast becoming Atlantic City's most popular convention hotel.

The Jefferson features an abundance of Meeting, Banquet and Exhibition Rooms fully equipped to handle your every need. Experienced personnel. Location ideal in heart of Atlantic City.

WRITE • PHONE • WIRE TODAY
FOR DESCRIPTIVE LITERATURE

Convention Manager,
HOTEL JEFFERSON
Atlantic City, N. J.

FOR THE TALC YOU NEED—

Call on Whittaker
"The Talc House"

SEND FOR FREE BOOK "TALC"
A comprehensive reference for manufacturers

OTHER WHITTAKER PRODUCTS FOR DRUG & COSMETIC MANUFACTURERS
Thomasset Certified Cosmetic Colors
U. S. P. Stearates • Powder Bases
Italian White Bentonite

WHITTAKER CLARK & DANIELS, INC.
260 West Broadway
New York 13, N. Y.

MR. WHITMAN: An oxygen-free water rinse prior to the dithio treatment would not have changed the results.

While it is commonly believed in this field that significant reversal of the reducing reaction can be carried out by simple water rinsing, this is most certainly not true unless there is oxygen present in the water. There is, of course, nothing intrinsically unstable about the cysteine group in water. Slide 15 shows that our reduced hair contained 0.128 millimoles of the SH-HS configuration per gram of hair, and .008 millimoles of the SSR-HS groupings per gram of hair. As I have said before, the .008 millimoles of SSR-HS can react spontaneously to reform cystine bonds. But there is obviously nothing in a water rinse in the absence of oxygen which will affect the SH-HS pairs. Incidentally, this is not just theory; we have proved this several times in the laboratory. Your criticism is entirely sound, and I regret that we didn't insert an oxygen-free water rinse just to satisfy you on this. Our aim was to observe and report on the different results which are obtained when "rebuilding" is carried out in the presence of dithio as compared with what happens when "rebuilding" is carried out in the absence of dithio. In Experiment 2 we washed with oxygen-free water in order to eliminate all thio and dithio from the systen before bringing in the oxidizing agent. In Experiment 3 we saw no point to washing with oxygen-free water because our intention was to bring dithio into the system rather than to remove it. Incidentally, the dithio treatment was carried out under nitrogen—i.e., in the absence of oxygen.

MR. HAYGOOD: Well, the point that I was trying to make was that I think you would find a considerable rise in the 20 per cent index washing with oxygen-free water, regardless of whether you re-oxidized or not.

MR. WHITMAN: We would get some, because the SSR-HS groupings can inter-react. But the maximum you could get in the case of Experiment 1 would be six per cent rebuilding.

Oxygen-free water acts as a deswelling agent for reduced hair, and it is difficult with it alone to completely remove the mobile constituents of the system. We have, in the course of another investigation, leached reduced hair continually with fresh dilute oxygen-free ammonium hydroxide, and in this way we have been able to obtain reduced hair which, wet or dry, is entirely stable over extended periods of time as long as oxygen is kept away.

MR. HAYGOOD: Do you find the same effects in the range of reduction that is used in practical permanent waving, where you get 20 per cent indexes of around 0.9 usually?

MR. WHITMAN: I have never seen hair with an index as high as 0.9 that has been exposed to a reducing agent. But I know some of us are running our indexes on dry hair, and perhaps you are running yours on dry hair.

MR. HAYGOOD: On wet hair.

MR. WHITMAN: Immersed?

MR. HAYGOOD: We can get up as high as 0.7 on tresses, but on the head we get up to 0.9, so I was just wondering if these effects are nearly as large when you don't reduce quite so much.

MR. WHITMAN: This is very interesting, I think. This gentleman is reporting that when he reduces his hair he is not left with as *low* an index as we report; and he is suggesting that possibly we reduced the hair too far. One of my regrets, as I said before, is that we didn't reduce the hair in these experiments far enough. This hair was, I would say, reduced only 60 to 70 per cent as far as would be necessary to permit satisfactory waving. If the wave had been carried out on the head I think the beauty operator, looking at a test curl, would say, "I have got to let this go longer." The discrepancy here is probably some difference in our manner of determining our indexes.

Normally after reducing hair, either in the beauty shop or in the laboratory, we end up with an index which is on the order of 0.2 or less and after we have finished with a wave in the beauty shop I regret to say—I am telling you all this in confidence—that our index very rarely gets up beyond 0.7. In the laboratory sometimes we get up to 0.8 or so, but we regard that as something of a sport.

MR. HAYGOOD: I didn't mean that our reduced hair was that high. Our reduced hair runs about what you had here—about 0.35.

MR. WHITMAN: I see. You will be thrown off in carrying out the evaluation scheme I have outlined if you fail to analyze the same *portion* of the hair strand that you use in your hysteresis determinations. The scalp hair is different in its cystine content from the tip ends. In fact, hair is a unique fiber to work with. One of our men observed recently that one of the things which is unique about human hair is that it only has one end!

QUESTION: I am particularly interested in one point in this paper. You report that the 20 per cent index was approximately 0.65 for oxidized hair, if I remember correctly. Yet you had your cystine recovery 95 per cent complete. I would expect that if the oxidation were 95 per cent complete and the hair was 95 per cent back to its normal stage, the index should be up very close to 1.0.

MR. WHITMAN: Yes, one would expect that the cystine content and the 20 per cent index would be linearly related to each other. If this were the case the curve shown on Slide 16 would be a straight line connecting the two extreme points. I *think* I know why this does not come out to be a straight line, but I know beyond any question at all that it does in fact bend just as we have shown it. As I said before, when you treat hair with peracetic acid or peroxide you get a straight line relationship, but when you break the cystine bonds with a mercaptan reducing agent you do not.

DR. MACKAY: Mr. Whitman, your calculations seem to be based on the assumption that the mercaptan groups that recombine, or rather the sulfur atoms that recombine, are those that were originally joined together in the cystine disulfide. You can do some rough sort of calculation as to the occurrence of sulfides on

the peptide chain, but why do you think that it is those sulfurs which were originally joined that are rejoined upon oxidation?

MR. WHITMAN: The question is: What makes us think that the same sulfurs are coming back together that were originally combined. I don't know how reassuring this is, but in our mind there is no longer any question at all about this. Five or ten years ago I can remember having experts explain to me that the cystine bonds are comparable to rungs in a ladder, and when we treat hair with a reducing agent we break these rungs; then we wind the hair on a rod, distorting the two polypeptide chains to such an extent that when we reoxidize we are reforming the rungs between different terminal points. But the calculations you refer to have indeed been made and do not, we think, support this picture. I didn't make these calculations; I am not that kind of a chemist. I don't like that kind of calculation. (I don't even like the simpler kind I have presented in this paper.) But according to the teachings of Pauling and Corey, the polypetide chains are coiled in a helix and the cystine bond occurs approximately every two turns. So you get one here [indicating] and then you come way around up here somewhere [indicating] and you run into another. We get into all kinds of difficulties when we try to picture a distortion of the polypeptide chains such that a new pair could come into conjunction so as to bond in a new way. All of this has been discussed at some length in the papers of Dr. Harold Lundgren of the Western Regional Research Laboratories, who has done some perfectly wonderful work in dissolving chicken feathers and then extruding them to yield a new synthetic keratin fiber. One of his great troubles has been that when he exceeds his early limits of reduction he gets into true solutions—where the SH's can migrate—and then he doesn't get the same SH's going back together again. In fact, his greatest difficulty is that he gets his SH's linking up along the same chain, rather than cross-linking two chains.

DR. MACKAY: One other question, please. What is the practical effect of waving with a lotion that contains a lot of disulfide and dithio?

MR. WHITMAN: The practical effect is that at the end of the reduction time there will be excessive concentrations of WSSR groups. Some proportion of these will appear opposite each other, and will not respond to neutralizing treatments. In the beauty shop we recognize hair containing excessive mixed disulfides as "rubbery." With bad lotions you can produce such hair quite consistently—we ran into quite a lot of it at one time when we were working with sulfite waving lotions. If you run an analysis on rubbery hair you will find that the SS content is much higher than the true cystine content, indicating that you have formed a lot of mixed disulfides at the expense of keratin-cystine linkages.

DR. MACKAY: I believe that, but what difference does it make to the woman? When she combs her hair, does it fall out?

MR. WHITMAN: Oh no. I didn't understand you. The

SPEED — ACCURACY in Tablet and Capsule Counting

Positive count, tablet and capsule filling machine gives maximum economy. Can handle most tablet products. Simple to use, rapid changeover from one product to another. PerfeKtum variable speed counter can fill up to 1500 bottles of 100 tablets hourly. Precision machined counting discs may be supplied with each machine for packaging your different tablets. Two models available.

TAB-COUNT MODEL T-400C

Est. 1922 **POPPER & SONS, INC.**
300 FOURTH AVENUE
NEW YORK 10, N. Y.

PerfeKtum

Write for new catalog #454 describing entire line of PerfeKtum equipment, including new rubber stoppering and aluminum crimping machines.

ROBECO CHEMICALS

Benzocaine USP

CAMPHOR USP

Cholesterol USP

GLYCINE (AMINO ACETIC ACID) NF

Wax Bees USP

WAX SPERMACETI USP

ROSENTHAL BERCOW CO. INC.

23 E. 26th St. N.Y. 10, N.Y. ROBECO Telephone MU 3-7500

Cable address "Rodrug"

question is: what difference does it make to the patron in real life? The stress-strain index represents to us a report as to what the hair is like for living purposes. We know that if hair is down at the 0.5 level, opposite the asterisk in Slide 16, it will be noticeably swellable in shampoos. If it is down below the 0.4 level, it will actually get gummy when you apply shampoo to it. This means that the hair is too swellable. If you run alkali solubilities you will find out the hair is *very* soluble in alkali as compared to the undamaged hair. Thinking of the woman that has this hair—it depends, of course, on what she is going to do with it. If by any chance she is going to bleach it, then it is very bad indeed because it will overbleach very easily. If she tries to dye it, the dye will take unevenly, giving streaky results. Her wave will certainly relax excessively, because she will be swelling her hair every time she shampoos it. If she doesn't particularly want a wave—I I am sure she doesn't want another in a hurry having seen what has happened—I think probably she will survive it in the course of time. It is nice that God keeps growing good hair on all our customers, isn't it?

ASPECTS OF SEVERAL ANTIBIOTICS

(*Continued from page 180*)

to 30 mg. per cc. or Gm. of neomycin sulfate.

One dermatologist[123] who carefully evaluated various bases for neomycin, employed the following formulas, each containing 5 mg. of neomycin sulfate per gram:

Ointment Base	*Cream Base*	*Water-Miscible Base*
Mineral Oil	Tegacid Regular ®	Carbowax ® 4000
Wool Fat	(Goldschmidt)	Carbowax ® 1500
Petrolatum	Polysorbate 80	Tween ® 20
	Propylene glycol	Propylene glycol
	Spermaceti	
	Metylparaben	
	Water	

He concluded that, in the treatment of patients with impetiginized eczematous dermatitis, the ointment was superior to the cream because the results were slightly more rapid with the ointment; and that both the ointment and the cream were definitely superior to the water-miscible base. In the treatment of folliculitis, he found little to choose between the ointment and the cream. However, he did mention an advantage of the cream base, in that it did not result in a greasy skin, and therefore could be applied to the face during the day.

In further evaluations at a later date, this same dermatologist stated that there is a distinct advantage in using a lotion rather than an ointment or wet dressing, in the treatment of patients with extensive involvement; the advantage of the lotion is then said to be "more economical, easier, and nicer to use." The formula he employed was essentially the same as the one tabulated under *Cream Base*, above, except that the amount of neomycin sulfate is stated as 6 mg. per 120 cc., and butylparahydroxybenzoate is added to the latter formula. Incidentally, he described the methylparaben and the butylparahydroxybenzoate as moniliastic agents.[107]

One investigator studied four separate ointment bases, each containing 4 mg. of neomycin and erythromycin, respectively, per gram of base. Apparently he obtained good results in each case. While he did not document the formulas quantitatively, it was stated that (a) the first two bases contained mineral oil, petrolatum, and lanolin, one of the two containing the parabens (methyl, etc.) and N-butyparahydroxybenzoate; (b) the third base was petrolatum plus the parabens; (c) and the fourth base was a "cholesterinized base without wool fat" plus the parabens and N-butylparahydroxy-benzoate.[144]

Another dermatologist preferred to use the water solution (100 mg. neomycin in 4 oz. of water); or, as a moist dressing, combining the antibiotic with Burow's solution or weak boric acid solution for hypertonic effect. This clinician stated that care should be taken in the choice of base, pointing out that in cases of sensitization to neomycin and other antibiotics, he has noted that "well over 90 per cent have been due to the synthetic wax bases."[143]

In addition to those vehicles specifically mentioned above for neomycin, it is possible that some of the numerous ointment and ointment-like bases employed for sulfa drugs in the past, would be adaptable for use with neomycin.[60]

Veterinary Uses: The veterinary interest in neomycin is said to be increasing. Already the drug has been used in numerous animal and fowl diseases.

In vitro and *in viro* studies with neomycin have shown that marked benefits can be expected in the treatment of bovine mastitis caused by streptococci, staphylococci, and by coliform and Pseudomonas organisms.[162,163,164,165]

It is logical that neomycin would be investigated for bovine mastitis, because of the varied organisms that may be involved in the infectious process.[166,165]

Subsequently, after preliminary studies which determined that neomycin was not irritating to udder tissues, retention studies in the udder, etc., treatment of 405 clinical cases of bovine mastitis indicated that neomycin was effective against the organisms mentioned above. Incidentally, there appeared to be no difference in the effectiveness of the antibiotic when employed either in an aqueous or in a water-miscible base.[163]

One veterinary worker who pursued *in vitro* studies in bovine udder infection with *Pseudomonas aeruginosa* stated that neomycin was the first antibiotic that showed any significant effects in Pseudomonas-type infections.[164] He also studied two other antibiotics, and a three-way combination containing neomycin, as follows:

	Results
(a) *Neomycin:* 0.5-2.0 Gm. in saline, or 10 or 20 cc. of a water-in-oil emulsion or ointment base, repeated two to eight times.	40 per cent recovery

RESULTS

(b) *Polymixin B:* 50 mg. (500,000 units) in 20 cc. of sterile 20 per cent sodium iodide solution, repeated at 24- or 48-hour intervals. — 38 per cent recovery

(c) *Dihydrostreptomycin Sulfate:* 2.0 Gm. in an emulsion vehicle, repeated two or three times at 24-hour intervals. — 24 per cent recovery

(d) Neomycin Sulfate 0.2 mg.; Polymixin B 20.0 mg.; Dihydrostreptomycin Sulfate 0.5 Gm. — 54 per cent recovery
Emulsion Vehicle. Repeated two or three times at 24-hour intervals.

In an outbreak of *Salmonella dublin* infection in a group of 50 calves, neomycin tablets were employed with much success. The dosage was two tablets (each containing 0.5 Gm. neomycin sulfate) every 12 hours, for the first three days; then one tablet daily until recovery. The course of the disease in the treated group was three to seven days, with an average of five days.[239]

The tablets were administered to 40 surviving calves which had received other antibiotics without effect; and from which the causative organisms were found resistant to them, but susceptible to neomycin. Seven moribund cases died, while 33 recovered completely. All of the untreated calves died.

Neomycin was also shown to be of value in the treatment of other animal diseases and infections, such as enteritis and diarrhea, otitis externa, conjunctivitis, keratitis, skin infections, and infected wounds.[167]

Neomycin has been tried in several poultry infections. For instance, in a test made on chickens bred in coccidiosis-infected pens, when neomycin was given to 20 chickens, three developed coccidiosis; whereas in 20 others given no drug, 16 developed coccidiosis. The dosage of neomycin was 50 mg. per kilogram daily, in water, for three days. In pullorum disease employing the same dosage and administration, of 20 chickens given neomycin, 17 remained pullorum-free; whereas in 25 others given no drug, five remained pullorum-free.[110]

Also, in Pasteurellosis and Shigellosis, neomycin appeared to yield worthwhile results.[110]

Geese are susceptible to fowl paratyphoid infections.[168] Consequently, in an outbreak of this infection, when studies confirmed the presence of a Salmonella of the fowl paratyphoid group, identified as *Salmonella derby*, neomycin sulfate was given orally to some of the geese, and the results compared to an untreated group. The death loss in the neomycin-treated group was 6.25 per cent, as compared to 54.54 per cent in the untreated group.[169]

TYROTHRICIN

While laboratory scientists of many years ago had considered the practical value of antibiotics, through their observations that certain pathogens were destroyed by soil bacteria, tyrothricin represents the first purified product of therapeutic value to be isolated from the soil.

SYNAROME
CORPORATION of AMERICA
Telephone GR 7-6313
24 East 21st Street New York 10, New York

BULGAROME:

Why is Otto of Rose Bulgarian so useful in perfumery? Certainly not because of its lasting properties. Many a synthetic rose is more lasting. Otto's best virtue is the head note, which imparts to perfumes a characteristic, aromatic lift.

BULGAROME is not only an effective, proven substitute for Bulgarian Rose, but allows new and original developments in modern types of perfumes. The relative cheapness of this product will permit its use in high proportion and give to perfumes a splendid expansion.

Division of
AMERICAN AROMATICS, INC.
• Perfume Compounds • Essential Oils
• Aromatic Chemicals

"PADDIE PUFFS"

are specially manufactured —

To insure excellent make-up application

Adopted by leading Cosmetic Houses because they are designed for pressed powder make-up.

Machine made in uniform size and various thicknesses.

Note the rounded edge to avoid streaks in the make-up, and the attractive satin top for your gold imprint.

You owe your fine cosmetics the best puffs ever designed to insure excellent make-up application.

Write for samples and prices.

VALCOURT PADDIES Patent No. 2-337-695

VALCOURT, INC.
100 West 22nd Street, New York 11, N. Y.

Tyrothricin was given its name in 1939, when it was first extracted from cultures of *Bacillus brevis* and, from the beginning, it was observed to have a strong action against species of Gram-positive organisms; and no activity toward the Gram-negative species tested. Also, from those earliest days, attempts to employ the material therapeutically, in infected wounds, showed promise.[170,171,172,173]

Tyrothricin, therefore, is not one of the "newer" antibiotics, but on the contrary, is one of the oldest.

Nevertheless, it is fitting to include tyrothricin in this commentary of several newer antibiotics because: (a) it continues to enjoy wide-scale usage for its action against Gram-positive organisms; (b) it is an antibiotic strictly for local use, and *not* systemic, this property being similar to neomycin; (c) it bears further similarity in certain properties, to bacitracin and neomycin, such as its freedom from toxicity and very low incidence of sensitivity when employed for local use; (d) of its companion use and synergism with bacitracin, and its potential use with neomycin, the latter use being insufficiently explored up to the present time; and (e) gramicidin, the main active antibiotic extracted from tyrothricin, is more recently increasing somewhat in usage.

However, since it is the purpose of this report to cover mainly the aspects of several of the newer antibiotics, only certain pertinent details on tyrothricin are included herein; especially since such a thorough bibliography containing complete abstracts has been compiled in the past.[160] and textbook inclusion of certain properties is also available.[11]

Properties: Tyrothricin is official in the U. S. Pharmacopoeia, in which it is described as consisting principally of gramicidin and tyrocidine; the latter usually being present as the hydrochloride.[174]

The compendium covers the usual complete data in its monograph on tyrothricin, describing the antibiotic as having a potency of not less than 90 per cent of the U.S.P. Tyrothricin Reference Standard.

Manufacturing processes employed today easily yield potencies well over 100 per cent, and some batches show potencies of 140 per cent or higher.

Tyrothricin Solution, Tyrothricin Spray, and Tyrothricin Troches, are also official in the U.S.P.

Tyrothricin itself is somewhat of a paradox not only because it is a "dual antibiotic," but because the two antibiotics present are chemically and bacteriologically dissimilar.[160,11,23] It has been stated that commercial tyrothricin contains approximately 20 per cent gramicidin and 80 per cent tyrocidine.[23]

Stability: Tyrothricin is indefinitely stable in fry forms of pharmaceutical products, such as lozenges or troches, even in the presence of many other medicinal agents. Also, a 20-50 mg. per cc. stock solution in 70-95 per cent alcohol (which may be employed to make a 0.5-2.0 mg. per cc. suspension of tyrothricin in distilled water or normal saline solution) is stable indefinitely.

Tyrothricin may precipitate in aqueous suspension, particularly on autoclaving or in the presence of inorganic salts; consequently such suspensions should be shaken thoroughly before use. As an aid in preventing precipitation from such use, small amounts of alcohol or glycerin may be added;[160] for instance, 1 Gm. of tyrothricin dissolves in 15 cc. of alcohol.[174]

While the aqueous insolubility of tyrothricin limits its solution percentage-strengths, such percentages are quite sufficient for the therapeutic purposes that would be suitable for tyrothricin usage.

In other words, much higher product strengths (whether in solution or in dry form) are unnecessary for this potent antibiotic; and, in fact, might conceivably be responsible for unnecessary and undesirable irritation. For instance, it is stated that tyrothricin should not be used as a dry powder in concentrated form.[160]

Sometimes solubilizing agents are employed to overcome this insolubility property. For instance, cetyl methyl benzyl ammonium chloride* is said to be a tasteless quaternary salt, generally available, and useful for solubilizing tyrothricin.

Compatibility and Incompatibility: Tyrothricin is compatible with a wide range of drugs and chemicals. In fact, there are probably very few agents that are ordinarily employed in pharmaceutical products with which it cannot be combined for stability reasons.

It is effective with anionic detergents and soaps; and is inhibited by phospholipides, but this is said to be counteracted by addition of protamine.[160]

Range of Activity: As mentioned, tyrothricin is widely active against most Gram-positive organisms, and this action is almost wholly due to its gramicidin content.[160,23] In fact, there are certain instances in the early literature where, apparently, the name gramicidin was mistakenly used synonymously with tyrothricin.[175,176]

The tyrocidine in tyrothricin has activity against certain Gram-negative organisms;[177] but also it has less antibacterial ability than gramicidin. Tyrocidine has the ability to lower the surface tension of aqueous solution.[178]

Uses: The use of tyrothricin is restricted to local application. It must come in direct contact with the infected area in order to be of maximum effectiveness because, being insoluble in water, it does not penetrate the tissues when applied locally.[160,179]

It is non-toxic when used, for instance, in throat lozenges and mouth washes; or, where indicated for internal use, when ingested orally. It is also non-toxic and virtually free from sensitivity when used in the usual dosages in topical pharmaceutical products; for dermatological conditions, infected wounds, etc.

Detailed clinical uses, human and veterinary, are documented elsewhere.[160]

Some of tyrothricin's newer potential uses are in tooth pastes, shampoos or other scalp preparations, in

*A product of Winthrop-Stearns, 1450 Broadway, New York, N. Y.

dedorant creams, soaps, shaving creams, etc.; the particular attractions in such products being its bacteriostatic action in the virtual absence of sensitivities.

Tyrothricin is not to be used parenterally, since it is toxic when carried into the blood stream.

Vehicles or Bases: No attempt is made here to cover, in detail, the bases used for tyrothricin preparations; since general bases are applicable for individual products, and formulations are usually easy to prepare, especially when the properties of solubility and stability are noted.

As mentioned under *Bacitracin*, tyrothricin has been combined with bacitracin in a "modified petrolatum" ointment base.[23] If desired, tyrothricin itself can be compounded in a plain petrolatum base, or one in which lanolin is incorporated in suitable pharmaceutical proportions.

The preparation of an aqueous suspension, using an alcoholic stock solution, has been described under *Stability*. In similar dosage, an emulsion may also be made; with "poppy seed oil, oleum ricini or oleum jecoris, for use on gauze pads."[160]

Because of its solubility in glycerin, it should not be difficult to compound a product designed for use as ear drops. In such a preparation, a small amount of alcohol could also be employed to aid solubility, if not medically contra-indicated.

Combinations: In addition to its usefulness for combining with numerous drugs and chemicals, tyrothricin has been employed advantageously with certain other antibiotics.

For instance, tyrothricin and penicillin has been recommended in the past.[180] More recently, the synergistic effect of tyrothricin and bacitracin has been noted, as mentioned before.[78,23]

Tyrothricin has been combined with sulfa drugs.[181-189] Early *in vitro* studies showed that combined tyrothricin-sulfadiazine therapy is more effective against upper respiratory organisms, than either employed singly.[181]

It is noted in passing that, in the past few years, while tyrothricin continues to enjoy a rather wide usage and relatively good popularity, the number of reports in the technical literature are noticeably small; at least in the English-language literature.

On the other hand, there appears to have been much more literature reporting on tyrothricin in the foreign scientific and medical literature.[182 through 199]

The exact reason for this difference is not known; but of course it can be surmised that the increase in interest in newer antibiotics such as bacitracin and neomycin, especially in this country is largely responsible.

Gramicidin

Gramicidin, as mentioned before, is the major active principle of tyrothricin; from which it is obtained by extraction, and crystallized and purified.

One part of gramicidin is equivalent, approximately, to five parts of tyrothricin, by weight.

Like tyrothricin, while gramicidin is not one of the

PRIVATE FORMULA
Tablets and Capsules
BY THE THOUSANDS---
OR BY THE MILLIONS
your product accurately compounded
Over 40 years' experience enables us to render you prompt, accurate, and dependable service in the manufacture of your tablets and hard shell capsules. Our central location expedites delivery to any point in the country. Furnished bulk or packaged.
Vitamin Tablets and Capsules—Tablets—Ointments—Powders
We Invite Your Inquiries
Standard Pharmacal Co.
OF CHICAGO
PRIVATE FORMULA MANUFACTURERS
M. F. Charley, President
847-853 W. JACKSON BLVD.
CHICAGO 7, ILL.

"newer" antibiotics, it belongs in a commentary of this kind for most of the same reasons as tyrothricin.

There are instances in the early literature where the name gramicidin was mistakenly used synonymously with tyrothricin. Also, gramicidin S has been called Russian tyrothricin; but this is not similar to what is known in this country as crystalline gramicidin *Dubos*, and cannot be used interchangeably.

The spectrum of gramicidin parallels that of bacitracin. In other words, it is effective *in vivo* and *in vitro* against Gram-positive cocci, the clostridia, and Neisseria. However, like tyrothricin, its action is primariiy bacteriostatic, as compared to the predominantly bactericidal action of bacitracin.[23]

Properties: Chemically, gramicidin is a cyclopeptide.[11] Like tyrothricin, it is essentially insoluble in water. Also, it is almost insoluble in ether, hydrocarbons, and chlorinated hydrocarbons.[200] It is soluble in ethyl alcohol, and in mixtures of ethyl alcohol and propylene glycol or glycerin. Other general properties are given elsewhere.[11]

Gramicidin stability also parallels tyrothricin, being more stable than other commercially available antibiotics.

Combinations: In the past, gramicidin appeared to lend itself to satisfactory combining with other antibiotics; for instance, with penicillin.[201,202] More recently, it has been combined with newer antibiotics for local use, such as neomycin; and is suited for such combinations not only because of its physical stability and compatibility, but because of freedom from toxicity and sensitivity when used locally.

Gramicidin Future: The future of gramicidin should improve in accordance with the ability to produce a lower cost commercial product, and in the meantime the antibiotic warrants continued laboratory and clinical investigations.

Candicidin

This name is given to a new antibiotic produced by a strain of *Streptomyces griseus*, which has been noted to be particularly effective against certain filamentous and yeast-like fungi.

While still in the experimental stage, Candicidin already has been noted to be fungicidal and fungistatic; and to exert specific activity against *Candida albicans* (monilia), the organism responsible for the moniliasis which sometimes occurs in individuals during the use of some broad-spectrum antibiotics.

For instance, *in vitro* studies have demonstrated that a minimum of 0.5-5.0 micrograms per cc. of candicidin resulted in complete inhibition of five strains of *Candida albicans*.

Recently, a water-soluble candicidin, with the high, repeatedly confirmed potency of 43,000 units per mg. has been produced in pilot plant quantities.[203]

The potential seriousness of moniliasis may be judged by the fact that the Council on Pharmacy and Chemistry of the American Medical Association has recommended that a warning statement be included on labels of certain of the popular wide-spectrum antibiotics with regard to the possible development of moniliasis following their use.[204]

The reasons for the Council's viewpoint can best be understood by a brief review of the medical findings on the subject of moniliasis.

Candida albicans, also known as *Monilia albicans* and *Monilia psilosis*,[205] is usually non-pathogenic, but is also known to be pathogenic for human beings under certain conditions.

It is a common inhabitant of the oral, respiratory, vaginal, and intestinal tracts, as well as on the skin, of normal persons. In the bowel, even though the organism may be present, and is usually of little consequence, there are also strong suggestions that monilia or other yeast-like organisms may *overgrow* and perhaps gather virulence; when the action of certain antibiotics causes supression or destruction of the intestinal bacterial flora.[206,207,208,209,210,211,212,213,204,214,215,216,27,217,165]

In other words, the antibiotics do not directly stimulate the growth of the fungi; but rather the fungi are resistant to the antibiotic agents in question.

While monilial infections usually follow a benign course, and therefore present an annoying but rarely difficult problem, nevertheless the fungus gains clinical importance because of its potential to produce a more serious condition. For instance, when this replacement occurs in a lung abscess, bronchiectatic cavity, or in certain other lesions, a condition unfavorable to the patient may be created.[218,219,220,221,222,204,223,216]

This increased abundance of Candida growth is said to occur because the organism is not susceptible, even in high concentrations, to the several broad-spectrum antibiotics in question.[213] Also, it makes little difference what route of administration is used for the antibiotic which may be responsible for stimulating monilia overgrowth; or whether used in tablets, sprays, troches, powders, etc.[224,225,226,214]

Incidentally, several of the above reports mention the possibility of overgrowth of Proteus and Pseudomonas infections, in addition to monilia, with the administration of several of the antibiotics.[214,215,27] This occurrence has been noted mostly in the pediatric literature.[227,228,229]

The occurrence of moniliasis, unlike many other mycoses, is not limited to any one country; but has a worldwide distribution.[230,231]

As you can see by the foregoing, the relationship of monilia overgrowth to the use of certain antibiotics, is a rather generally accepted viewpoint. However, it may be noted that there is an occasional individual who may maintain that increased monilial incidence cannot be correlated with extensive administration of certain antibiotics.[132]

In the past, certain chemical agents have been mentioned as having possible moniliastic properties, such as: gentian violet, cetyl pyridinium chloride, Castellani's paint, three per cent Vioform ointment, sodium caprylate, methylparaben, propylparaben, and butylpara-

hydroxybenzoate.[211-232-233-26-107] Malachite green, brilliant green and methylene blue have been tried.[234]

The vitamin B complex has also been used in combatting the vitamin deficiency induced, with subsequent lowering of host resistance to monilial invasion.[212-213-216]

None of the agents above have proved to be wholly successful or generally accepted.

Consequently, if experimental and clinical work should confirm the effectiveness of candicidin in the treatment of moniliasis, this would represent an exceptionally important advance in therapy in view of the wide-scale usage of those antibiotics that are evidently responsible for the "overgrowth" of monilia.

Candicidin, therefore, can be visualized not only as a hopeful agent in the treatment of monilasia, but also as an important adjunctive medicinal to be administered, for possible prophylactic effect, along with the several "offending" antibiotics.

In addition, there is a possibility that candicidin may prove effective against monilial infection not associated with antibiotic administration; such as oropharygeal thrush, infections caused by ill-fitting dental plates, etc. It is obviously worth further investigation.

Summary

Bacitracin and neomycin have advantageous properties of similar nature when employed locally, or when administered by oral ingestion to reach the gastro-intestinal tract; being virtually non-toxic and having extremely low incidences of sensitivity and resistance development.

With the advent of bacitracin and neomycin, tyrothricin has been used less than formerly, by oral ingestion for gastro-intestinal conditions.

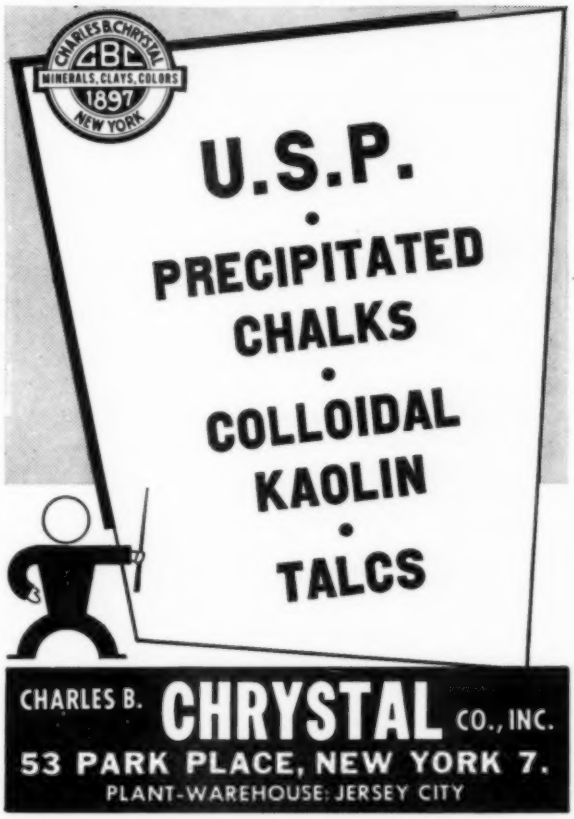
Tyrothricin employed by topical or other local means is at least as non-toxic, and free from sensitivities, as bacitracin and neomycin. Evidently this is also true for gramicidin.

While bacitracin and tyrothricin are solely Gram-positive agents, bacitracin has bactericidal action, while tyrothricin is bacteriostatic. Gram-negative organisms are susceptible to neomycin, in addition to certain Gram-positive organisms.

Bacitracin is a highly useful bactericidal antibiotic, effective against Gram-positive organisms; with major local uses in the treatment of pyogenic skin infections, open wounds, and mild oropharyngeal infections. It is suitable for combining with numerous other medicinal agents.

Bacitracin is one of the several antibiotics effective in the treatment of intestinal amebic dysentery and, because it is not absorbed from the gastro-intestinal tract to any significant extent, may possess an important advantage because it is better tolerated than most other antibiotics employed as amebacidal agents.

A combination of bacitracin with one of the acceptable chemical amebacides is viewed as having a potentially bright future. An antispasmodic drug would also



be a worthwhile addition to a bacitracin amebacidal product.

Neomycin is considered a close approach to the ideal for intestinal antisepsis, especially for preoperative intestinal surgery. Neomycin, like bacitracin, is not absorbed from the intestinal tract to any significant degree.

Comments are made on numerous vehicles or bases, especially for bacitracin and neomycin, for human and veterinary uses.

Antibiotic combinations are usually justified, especially when judiciously employed and chosen on an individual basis for each combination.

Bacitracin is noted to be synergistic with certain other antibiotics. Neomycin synergism is also mentioned. In a few instances, there is lack of agreement among investigators.

Simple, practical, consistent, and non-controversial methods of testing mixtures of antibiotics, which are lacking up to the present time, would be a boon to the pharmaceutical industry, as well as to the clinician.

A new bacitracin compound, bacitracin methylene disalicylate, is discussed. The compound can be prepared to have potencies ranging from 14 to 38 units per mg. of bacitracin activity.

The *lower potency* (14 units/mg.) bacitracin compound, which is commercially available for use alone, or in combinations as specialty products, has found its greatest application in the animal and poultry field; i.e., in swine enteritis and infectious baby pig scours when administered in therapeutic amounts, and for growth stimulation in swine and poultry when used in small amounts. This particular form, being insoluble, is suitable for admixture with dry feed.

The *high potency* (38 units/mg.) bacitracin compound, which is still in the experimental stage, has strong implications for human usage in the same conditions for which parent bacitracin is employed.

An instantly *soluble* bacitracin methylene disalicylate (12 units/mg.) has recently been developed. It can be used in animal drinking water, alone or with certain other soluble medicinal agents. In the latter instance it could be most useful for inclusion, when designing specialty products.

A *soluble* form of the *high potency* bacitracin methylene disalicylate, in highly purified state, has been developed more recently. Experimentation should reveal suitable applications for its use in humans.

Bacitracin, neomycin, tyrothricin, and gramicidin have no effect against fungi or yeast-like organisms; nor do other antibiotics known up to more recently.

Monilia (*Candida albicans*) is a fungal organism which occurs during the use of some of the popular, broad-spectrum antibiotics. While monilia is often present in normal individuals, the organism may become a problem when "overgrowth" occurs amidst the environment of usage of such antibiotics. The relationship of monilia "overgrowth" to such antibiotics is a generally accepted view.

Monilia "overgrowth" has not been noted in reports on the use of bacitracin, tyrothricin, and gramicidin. Only a few instances of cutaneous moniliasis, in low incidence, have been reported with neomycin; and this rather rare occurrence is not in the same category of moniliasis occurring with several of the so-called popular, broad-spectrum antibiotics.

Certain chemical agents, mentioned herein, have been employed as moniliastic agents, but they have not proved to be wholly successful or generally accepted.

Candicidin, a new antibiotic, has been noted to be particularly effective against certain filamentous and yeast-like fungi. While still in the experimental stage, this fungicidal and fungistatic antibiotic appears to exert specific activity against monilia (*Candida albicans*).

Recently, a water-soluble candicidin with a potency of 43,000 units per mg. has been produced in pilot plant quantities.

If further experimental and clinical work should confirm the high effectiveness of candicidin, it could be visualized not only for its importance in the actual treatment of moniliasis, but also as an important adjunctive agent to be administered, for possible prophylactic effect, along with the several "offending" antibiotics. Also, it may prove effective against monilial infection not associated with such antibiotic administration; such as oropharyngeal thrush, infections caused by ill-fitting dental plates, etc.

LITERATURE

1. Bacitracin. A Review and Digest of the Literature up to and Including January, 1952. Research Division, S. B. Penick & Co., New York.
2. Federal Register, Washington, D. C., Dec. 3, 1953.
3. Neomycin brochure. Res. Div., S. B. Penick & Co., New York, N. Y., 1954.
4. B. A. Johnson, *et. al.* Bacitracin: A New Antibiotic Produced by a Member of the *B. Subtilis* Group, Science, *102*:376, (Oct. 12) 1945.
5. F. L. Melaney and B. A. Johnson. Bacitracin. Am. J. Med., *7*:794, 1949.
6. J. V. Scudi, *et al.* Some Pharmacological Characteristics of Bacitracin. III. Chronic Toxicity Studies of Commercial Bacitracin in the Dog and Monkey. Proc. Soc. Exper. Biol. & Med., *66*:558, 1947.
7. J. V. Scudi and W. Antapol. Some Pharmacological Characteristics of Bacitracin. Proc. Soc. Exper. Biol. & Med., *64*:503, 1947.
8. J. V. Scudi, *et al.* Some Pharmacological Characteristics of Bacitracin. II. Absorption and Excretion of Bacitracin in the Dog. Proc. Soc. Exper. Biol. & Med., *65*:9, 1947.
9. H. Eagle, *et al.* The Blood Levels and Renal Clearance in Rabbits and Man of an Antibiotic Derived from *B. subtilis* (Bacitracin). J. Clin. Invest., *26*:919, (Sept.) 1947.
10. H. S. Anker, *et al.* Bacitracin: Methods of Production, Concentration and Partial Purification, with a Summary of the Chemical Properties of Crude Bacitracin. J. Bact., *55*:249, 1948.
11. A. L. Baron. Handbook of Antibiotics, Reinhold Publishing Corp., New York, 1950.
12. G. C. Bond, *et al.* Oral Administration of Bacitracin. Proc. Soc. Exp. Biol. Med., *68*:395, 1948.
13. J. H. Humphrey, *et al.* The International Standard for Bacitracin. Bull. W. H. O., *9*:861, 1953.
14. I. I. Lubowe. The Treatment of the Pyogenic Dermatoses with a Bacitracin-Neomycin Ointment. Am. Practitioner, *9*:625, (Sept.) 1953.
15. H. Most. Recent Advances in the Therapy of the More Common Protozoan and Helminthic Infections of Man. Bull. N. Y. Acad. Med., *25*:717, (Nov.) 1949.
16. H. Eggers. Clinical Ophthalmic Experience with Bacitracin. Am. J. Ophth., *34*:1706, (Dec.) 1951.
17. C. A. Chandler. Antibiotic Therapy. Yale J. Biol. & Med., *26*:369, (April) 1953.
18. H. B. Shookhoff and M. M. Sterman. Treatment of Amoebiasis with Aureomycin and Bacitracin. Ann. N. Y. Acad. Sc., *56*:1125, (Dec. 30) 1952.
19. J. E. Coyle, *et al.* Bacitracin: Its Topical Use in Aural and Pharyngeal Infections. Arch. Otolaryng., *50*:284, 1949.
20. J. L. Derzavis, *et al.* Topical Bacitracin Therapy of Pyogenic Dermatoses. J. A. M. A., *141*:191, (Sept. 17) 1949.
21. Editorials and Comments. Misuse of Antibiotic Troches. J. A. M. A., *152*:533, (June 6) 1953.
22. A. J. Philip. Bacitracin - Polymixin B Sulfate Lotion. Antibiot. & Chemoth., *4*:763, (July) 1954.
23. J. L. Miller, *et al.* Tyrotrace in Topical Therapy. Arch. Dermat. & Syph., *68*:303, (1953).
24. J. F. Madden. Management of the Pyodermas. Minnesota Med., *33*:462, 1950.
25. J. L. Miller, *et al.* Local Use of Bacitracin. J. Invest. Dermat., *10*:179, 1948.
26. C. S. Livingood, *et al.* Pyogenic Infections Treated with Neomycin. J. A. M. A., *148*:334, (Feb. 2) 1952.
27. R. L. Kile, *et. al.*. Topical Use of Polymixin-Bacitracin Ointment in Dermatology. Arch. Dermat. & Syph., *68*:296, 1953.
28. F. L. Melaney and B. A. Johnson. Bacitracin Therapy. The First Hundred Cases of Surgical Infections Treated Locally with the Antibiotic. J. A. M. A., *133*:675 (Mar.) 1947.

29. F. L. Melaney. Topical use of Antibiotics in Established Surgical Infections. Surg. Gyn. Obst., *86*:760, (June) 1948.
30. A. E. Braley; as cited in reference (5).
31. J. L. Miller, *et al.* Evaluation of Bacitracin in Local Treatment of Pyogenic Infections. Arch. Dermat. & Syph., *60*:106, (July) 1949.
32. F. M. Gastineau and H. J. Florestano. Clinical Experience with "Polycin," a Polymixin-Bacitracin Ointment. A. M. A. Arch. Dermat. & Syph., *66*: 70, (July) 1952.
33. M. B. Sulzberger and R. L. Baer. Year Book of Dermatology and Syphilology. The Year Book Publishers, Inc., Chicago, 1953-1954, p.13.
34. C. S. Livingood. Pyogenic Cutaneous Infections in Children. Their Modern Management. Texas State J. of Med., *47*:469, 1951.
35. B. Kanee. A Short Report on the use of Hydrocortisone (Compound F) Acetate Ointment, and Hydrocortisone and Neomycin Sulfate Ointment. Canad. M.A.J., 71: 64 (July) 1954.
36. G. A. Martin, *et al.* Comparative Efficacy of Amebacides and Antibiotics in Acute Amebic Dysentery. J. A. M. A., *151*:1055, (Mar. 28) 1953.
37. L. V. McVay, Jr., *et al.* A Preliminary Report of the Successful Treatment of Amebiasis with Aureomycin. Science, *109*:590, (June 10) 1949.
38. L. V. McVay, Jr., *et al.* The Treatment of Amebiasis with Aureomycin. South. M. J., *43*:308, (April) 1950.
39. W. W. Frye, *et al.* Antibiotics in the Treatment of Acute Amoebic Dysentery. Ann. N. York Acad. Sc., *55*:1104, (Dec. 30) 1952.
40. J. L. Bradin, Jr. and E. L. Hansen. Indirect *In Vitro* Action of Antibiotics in Comparison with Activity of Accepted Amebacides. Am. J. Trop. Med., *30*:27 (Jan.) 1950.
41. W. Balamuth. Action of Antibiotics Against Intestinal Amoebae *In Vitro*. Ann. N. Y. Acad. Sc., *55*:1093, (Dec. 30) 1952.
42. O. Felsenfeld, *et al.* A Study of the Effect of Neomycin and Other Antibiotics on Bacteria, Viruses, and Protozoa. J. Lab. & Clin. Med., *35*: 428, (Mar.) 1950.
43. N. J. Weiser, *et al.* Experiences in the Diagnosis and Antibiotic Therapy of Amebiasis. An Analysis of 50 Cases. Ann. Int. Med., *38*:1002, (May) 1953.
44. R. E. Dolkart. The Diagnosis and Treatment of Amebic Dysentery. J. Am. Geriat. Soc., *1*:477, (July) 1953.
45. E. L. Faust. The Prevalence of Amebiasis in the Western Hemisphere. Am. J. Trop. Med., *22*:93, 1942.
46. T. B. Magath and C. B. Ward. Laboratory Methods of Diagnosing Amoebiasis. Am. J. Hyg., *8*:840, 1928.
47. E. C. Faust. Incidence and Significance of Infestation with *E. Histolytica* in New Orleans and American Tropics. Am. J. Trop. Med., *11*:231, 1931.
48. J. F. Kessel and D. Sinitsin. A Survey of Intestinal Protozoa Among Children and Adults in Los Angeles. J. Parasitol., *24*:433, 1938.
49. B. K. Spector and A. V. Hardy. Studies of the Acute Diarrheal Diseases. Pub. Health Rep., *52*:1105, 1939.
50. G. McHardy. Incidence of Amebiasis. Gastroenterology, *25*:616, (Dec.) 1953.
51. E. C. Faust. Personal Communication, as reported in reference (5).
52. A. B. Longacre. Personal Communication, as reported in reference (5).
53. H. Most, *et al.* Treatment of Amebiasis with Bacitracin and Other Antibiotics. Am. J. Trop. Med. *30*:491, 1950.
54. H. E. Shookhoff. The Present Status of Antibiotics in the Treatment of Protozoan Diseases. Bull. N. Y. Acad. Med., *27*:439, 1951.
55. L. Graupner, *et al.* Bacitracin in Treatment of Amebic Dysentery and Ulcerative Colitis. Quart. Bull. Northwest. Univ. Med. Sch., *24*:111, 1951.
56. O. Felsenfeld, *et al.* *In Vitro* and *In Vivo* Tests with Newer Antibiotics Against *Endamoeba Histolytica*. Am. J. Pub. Health, *41*:1078, 1951
57. G. McHardy and W. W. Frye. Antibiotics in Management of Amebiasis. J. A. M. A., *154*:646, (Feb. 20) 1954.
58. K. F. Chan and H. W. Brown. The Treatment of Pinworm (Enterobius Vermicularis) Infection with Bacitracin and Sulfasuxidine. Am. Pract. & Dig. of Treatm., *5*:100, (Feb.) 1954.
59. S. F. Jeffries, *et al.* A New Antibiotic Base. J. Am. Pharm. A., Prac. Pharm. Ed., *13*:337, (May) 1954.
60. W. B. Baker. Useful Bases for Sulfa Drugs. D. & C. Industry, 3 (Mar.) 1944.
61. E. Jawetz and J. B. Gunnison. An Experimental Basis of Combined Antibiotic Action. Council on Pharmacy and Chemistry. Report to the Council. J. A. M. A., *150*:693, (Oct. 18) 1952.
62. A. Sorsby. Specific Treatment of Ocular Infection. Practitioner. *170* 445, (May) 1953.
63. Cornell Conferences on Therapy. Therapeutic Use of Combinations of Antibiotic Agents. N. Y. State J. Med., *53*:1228, (May 15) 1953.
64. E. Jawetz and J. B. Gunnison. Antibiotic Synergism and Antagonism: An Assessment of the Problem. Pharmacol. Rev., *5*:175, (June) 1953.
65. L. C. Weaver, *et al.* Potency of Antiepileptic Drug Combinations. Federation Proc., *11*:401, 1952.
66. H. Eagle and R. Fleischman. Therapeutic Activity of Bacitracin in Rabbit Syphilis, and Its Synergistic Action with Penicillin: Preliminary Report. Proc. Soc. Exper. Biol. & Med., *68*:415, 1948.
67. Leading Articles. Dosage of Antibiotics. Lancet, *1*:475, (Mar. 7) 1953.
68. J. O. Heishman. Report on Subtilin and Bacitracin as Possible Treatment for Bovine Mastitis. Am. J. Vet. Res., *11*:206, 1950.
69. L. I. Grossman. Polyantibiotic Treatment of Pulpless Teeth. J. Am. Dent. Assoc., *43*:265, 1951.
70. B. A. Johnson and F. L. Meleney. Studies on the Synergism Between Bacitracin and Penicillin: Correlation of *In Vivo* with *In Vitro* Results. Ann. N. Y. Acad. Sc., *53*:42, 1950.
71. H. H. Anderson and J. Van D. Anderson. Antibiotics Against Amebiasis in Macaques. Am. J. Trop. Med., *30*:193, 1950.
72. A. K. Hrenoff and H. A. Anderson. Antibiotics Against Natural Amebiasis in Macaques. Fed. Proc., *9*:287, 1950.
73. J. M. Greenhouse and W. C. Ryle. Combined Bacitracin-Neomycin Ointment in the Treatment of Pyogenic Infections of the Skin. A. M. A. Arch Dermat. & Syphil., *69*:366, (Mar.) 1954.
74. E. J. Pulaski. Current Therapeutics. LXVI Neomycin Practitioner, *170*: 669, (June, 1953).
75. R. S. Baldwin. *In Vitro*. Studies with Neomycin-Bacitracin Combinations Against Several Pathogenic Enteric Bacteria. Bact. Proc., The Soc. Amer. Bacteriologists, *51*:32, (May 27) 1951.
76. E. J. Poth. Modern Concepts of Intestinal Antisepsis. Amer. Surg., *18*; 572, (June) 1952.
77. C. W. Price, *et al.* Studies of the Combined Action of Antibiotics and Sulfonamides. Am. J. Pub. Health, *39*:340, 1949.
78. I. I. Lubowe. The Use of Bacitracin-Tyrothricin Ointment in the Treatment of the Pyogenic Dermatoses. N. York State J. M., *51*:611, (Mar. 1) 1951.
79. E. H. Loughlin, *et al.* Streptomycin—Bacitracin—Polymixin Combinations. Antibiotics Ann., 1953-1954, p. 291.
80. E. Jawetz, *et al.* Studies of Antibiotic Syngerism and Antagonism. J. Bact., *64*:29, (July) 1952.
81. E. Jawetz, *et al.* Studies on Antibiotic Syngerism and Antagonism. Arch. Int. Med., *87*:349, 1951.
82. H. Welch and C. N. Lewis. Antibiotic Therapy. Washington, D. C., Arundel Press, Inc., 1951.

(Continued on page 284)

HUISKING

CHEMICALS

PHARMACEUTICAL INDUSTRIAL

OILS • VITAMINS • DRUGS • RAW MATERIALS

Importers Exporters Manufacturers

CAMPHOR USP POWDER *DuPont*
CAMPHOR USP TABLETS ½ & 1 OZ. *Tower Brand*
QUININE & SALTS *Braunschweig*
QUINIDINE & SALTS *Braunschweig*
HYOSCINE HYDROBROMIDE
HYOSCYAMINE *Hydrobr. & Sulfate*
SUGAR OF MILK USP & Commercial
CHLOROPHYLL *Allen's*
MENTHOL USP
ATROPINE SULFATE & ALKALOID
THYMOL NF *Crystals*
EPHEDRINE HYDROCHLORIDE USP
BRUCINE SALTS
ICHTHAMMOL
SULFUR USP PRECIP. *English*
MAGNESIUM CARBONATE USP *Blocks*
NAPHTHALENE
HAARLEM OIL

COD LIVER OIL USP
Peder Devold
ALL POTENCIES
•
For Poultry & Animal Feeding:
COD LIVER OIL Devolkod®
USP & Fortified Grades
VITAMIN A & D FEEDING OILS
Devold
•
WHEAT GERM OIL
Peder Devold

SANTONIN and ALKALOIDS of American Manufacture

CHAS. L. HUISKING & CO., INC.
PEDER DEVOLD OIL CO. DIV. SANTONINE CO. OF AMERICA DIV.
215 FOURTH AVENUE, NEW YORK 3, N. Y.
Factory & Warehouse: 45 CLINTON AVENUE, BROOKLYN 5, N. Y.
Telephone: GRamercy 5-3900
Telegrams: HUISKING, WUX, NEW YORK
Cables: HUISKING, NEW YORK
London Agents:
Wheeler & Huisking Ltd.
26 Great Tower St., E.C.3
Since 1910

Old Empire

AEROSOL BULK PRODUCTS

- Shampoos
- Colognes
- Shave Creams
- Hand Lotions
- Sun Tan Preps
- Hair Lacquers
- Alcoholic Specialties

Extensive development laboratories at your service.

Inquiries Solicited • Samples on Request

OLD EMPIRE, INC.
Manufacturing Chemists
Mt. Prospect & Verona Aves., Newark, N. J.
HUmbolt 4-2121

(*Continued from page 283*)

83. H. Welch. Principles and Practice of Antibiotic Therapy. Med. Encyclop., Blakiston Co., New York, 1954.
84. P. Simonoff, *et al.* Some Properties of Bacitracin Methylene Disalicylate (DPS). Proceedings of the Symposium on Antibiotics. Antib. Annual., Med. Encyclopedia, 1953, p. 395.
85. J. L. Radomski, *et al.* The Toxicity of Bacitracin Methylene Disalicylate for Animals and Absorption Studies in Man. Antib. & Chemoth., *4*:304, (Mar.) 1954.
86. I. S. Rossoff and W. Abel. Bacitracin: Its Use in Control and Treatment of Swine Enteritis. Vet. Med., *48*:369, 1953.
87. J. R. Couch. Texas Agriculture Experiment Station. Communication, as cited in reference (84).
88. W. N. Konde. Oral Bacitracin in Diarrheas (Dogs). N. Am. Vet., *30*: 776, 1949.
89. H. G. Payne, *et al.* Oral Toxicity of Bacitracin. Fed. Proc., *9*:306, 1950.
90. H. G. Payne, *et al.* The Oral Toxicity of Bacitracin. Antib. & Chemoth., *1*:387, 1951.
91. W. N. Konde. Further Investigation of Oral Bacitracin in Diarrheas. N. Am. Vet., *33*:36, (Jan.) 1952.
92. R. Braude, *et al.* The Value of Antibiotics in the Nutrition of Swine: A Review. Antib. & Chemoth., *3*:271, (Mar.) 1953.
93. O. Mickelsen. Nutritional Aspects of Antibiotics. *29*:221, (Feb.) 1953.
94. S. Black, *et al.* Use of Sulfaguanidine in Nutrition Experiments. Proc. Soc. Exper. & Med., *47*:308, 1941.
95. E. Nielsen and C. A. Elvehjem. The Growth Promoting Effect of Folic Acid and Biotin in Rats Given Sulfanilylguanidine or Succinyl Sulfathiazole in Purified Diets. Science, *96*:321, 1942.
96. F. S. Daft and W. H. Sebrell. The Successful Treatment of Granulocytopenia and Leukopenia in Rats with Crystalline Folic Acid. Pub. Health Rep., *58*:1542, 1943.
97. G. M. Briggs, *et al.* Effect of Ascorbic Acid on ChickGrowth when Added to Purified Rations. Proc. Soc. Exper. Biol. & Med., *55*:130, 1944.
98. P. R. Moore, *et al.* Use of Sulfasuxidine, Streptothricin and Streptomycin in Nutritional Studies with the Chick. J. Biol. Chem., *165*:437, 1946.
99. E. L. R. Stokstad, *et al.* The Multiple Nature of the Animal Protein Factor. J. Biol. Chem., *165*:437, 1946.
100. E. L. R. Stokstad and T. H. Jukes. Further Observations on the "Animal Protein Factor." Proc. Soc. Exper. Biol. & Med., *73*:523, 1950.
101. H. D. Branion and D. C. Hill. The Comparative Effect of Antibiotics on the Growth of Poults. Poultry Sc., *30*:793, 1951.
102. L. D. Matterson and E. P. Singsen. A Comparison of Several Antibiotics as Growth Stimulants in Practical Chick-Starting Rations. Storrs. Agric. Exper. Sta. Bull. No. *273*:20, (Mar.) 1951.
103. C. B. Knodt. Antibiotics in the Growth of Ruminant Animals. Antibi. & Chemoth., *3*:442, (Apr.) 1953.
104. J. K. Loosli and H. D. Wallace. Influence of APF and Aureomycin on the Growth of Dairy Calves. Proc. Soc. Exper. Biol. & Med., *75*:531, 1950.
105. S. A. Waksman and H. A. Lechevalier. Neomycin, A New Antibiotic Active Against Streptomycin-Resistant Bacteria, Including Tuberculosis Organisms. Science, *109*:305, (Mar.) 1949.
106. E. A. Swart, *et al.* Neomycin Recovery and Purification. Arch. Biochem., *24*:92, 1949.
107. M. A. Forbes, Jr. Neomycin Lotion in Treatment of Cutaneous Bacterial Infections. Arch. Dermat. & Syphil., *68*:631, (Dec.) 1953.
108. E. A. Swart, *et al.* The Identity of the Neomycin Complex, as Measured by Countercurrent Distribution and Microbiological Analyses. J. Amer. Chem. Soc., *73*:3253, (July) 1951.
109. Food and Drug Administration. Bacitracin-Neomycin Tablets. Fed. Reg., *16*:4964, 1951.
110. S. A. Waksman. Neomycin. Nature, Formation, Isolation, and Practical Application. Rutgers Univ., Press, New Brunswick, N. J., 1953.
111. B. E. Leach, *et al.* The Isolation and Characterization of Neomycin. J. Am. Chem. Soc., *73*:2797, 1951.
112. J. D. Dutcher, *et al.* Neomycin B and C and Some of Their Degradation Products. J. Am. Chem. Soc., *73*:1384, 1951.
113. E. A. Swart, *et al.* The Isolation and Purification of Neomycin. J. Clin. Invest., *28*:1045, 1949.
114. S. A. Waksman, *et al.* Neomycin: Production and Antibiotic Properties. J. Clin. Invest., *28*:934, 1949.
115. Stability Studies on Neomycin Solutions and Ointments. Unpublished data. Research Div., S. B. Penick & Co., New York, N. Y., 1954.
116. S. A. Waksman, *et al.* Neomycin Activity Upon Mycobacterium Tuberculosis and Other Mycobacteria. Am. Rev. Tuberc., *60*:78, (July) 1949.
117. P. T. Warth, *et al.* Antibacterial Action of Neomycin and Furadroxyl *In Vitro* and *In Vivo*. Bull. Johns Hopkins Hosp., *86*:169, (Mar.) 1950.
118. G. L. Hobby, *et al.* The Evaluation of Neomycin and Other Antimicrobial Agents of Bacterial and Fungal Origin and Substances from Higher Plants. Ann. New York Acad. Sc., *52*:775, (Dec.) 1949.
119. E. P. Abraham. New Antibiotics-Chloramphenicol, Aureomycin, Terramycin and Neomycin. J. Pharm. Pharmacology, *3*:257, 1951.
120. S. A. Waksman, *et al.* Antimicrobial Properties of Neomycin. J. Lab. & Clin. Med., *36*:93, (July) 1950.
121. E. J. Poth. Intestinal Antisepsis in Surgery. J. A. M. A., *153*:1516, (Dec. 26) 1953.
122. B. A. Waisbren and W. W. Spink. Comparative Action of Aureomycin, Chloromycetin, Neomycin, Q-19, and Polymixin B Against Gram Negative Bacilli. Proc. Soc. Exper. Biol. & Med., *74*:35, (May) 1950.
123. M. A. Forbes, Jr. A Clinical Evaluation of Neomycin in Different Bases. South M. J., *45*:235, (Mar.) 1952.
124. A. M. Lazar and J. Fishman. Neomycin in the Treatment of Otitis Media in Infants. Eye, Ear, Nose & Throat Month., *29*:484, (Sept.) 1950.
125. D. T. Carr, *et al.* Occurrence of Deafness in Neomycin Therapy. Correspondence. J. A. M. A., *144*:65, (Sept. 2) 1950.
126. B. A. Waisbren and W. W. Spink. A Clinical Appraisal of Neomycin. Ann. Int. Med., *33*:1099, (Nov.) 1950.
127. O. Felsenfeld, *et al.* Neomycin Blood Levels in Man. Am. J. Clin. Path., *20*:670, (July) 1950.
128. J. R. Wolgamot and G. G. Duncan. Clinical Use of Neomycin, Preliminary Report. Pennsylvania M. J., *53*:1264, (Dec.) 1950.
129. G. G. Duncan, *et al.* Neomycin: Results of Clinical Use in 10 Cases. J. A. M. A., *145*:75, (Jan. 13) 1951.
130. H. E. Bacon, *et al.* Evaluation of Neomycin-Phthalylsulfathiazole in Preparation of the Large Bowel for Surgery. A. M. A. Arch. Surg., *68*: 344, (Mar.) 1954.
131. S. N. Buis and L. L. Friedman. An Evaluation of Topical Antibiotic Therapy in the Local Treatment of Infections of the Nose and Sinuses. Antibiot. and Chemother., *3*:299, (Mar.) 1953.
132. A. M. Kligman. Are Fungus Infections Increasing as a Result of Antibiotic Therapy? J. A. M. A., *149*:979, (July 12) 1953.
133. J. H. Davis, *et al.* Preoperative Preparation of the Bowel with Neomycin Surgery, *35*:434, (Mar.) 1954.
134. J. W. Woods, *et al.* Monilial Infection Complicating the Therapeutic Use of Antibiotics. J. A. M. A., *145*:207, 1951.
135. E. J. Poth, *et al.* Neomycin: An Adjunct in Abdominal Surgery. South M. J., *44*:226, (Mar.) 1951.
136. R. L. Kile, *et al.* Use of Neomycin in Dermatology. J. A. M. A., *148*: 339, (Feb. 2) 1952.
137. C. S. Livingood and J. F. Mullins. Management of Bacterial Infections of the Skin. Postgrad. Med., *12*:15, (July) 1952.
138. R. L. Kile, *et al.* Topical Use of Neomycin: Preliminary Reports. Arch. Dermat. & Syph., *62*:911, (Dec.) 1950.
139. As cited in reference (123).
140. M. S. Falk and M. F. Allende. The Use of Neomycin in Dermatology: Preliminary Report. Permanente Foundation M. Bull., *9*:75, (July) 1951.
141. W. E. Herrell. Current Trends in Antibiotic Therapy. J. Iowa M. Soc., *42*:287, (July) 1952.
142. L. W. Kimberly. The Treatment of Pyogenic Skin Infections with Topical Neomycin. J. Iowa M. Soc., *42*:221, (May) 1952.
143. E. D. Osborne. The Treatment of Skin Infections. N. Y. State J. Med., *54*:506, (Feb. 15) 1954.
144. J. F. Mullins. Neomycin-Erythromycin Ointment in the Treatment of Pyodermas. Texas State J. Med., *50*:292, (May) 1954.
145. L. V. McVay, Jr., *et al.* Neomycin in the Treatment of Human Amebiasis. Am. J. Med. Sc., *223*:20, (Jan.) 1952.
146. A. W. Vogel, *et al.* Neomycin-Ocular-Tissue Tolerance when Locally Applied in the Rabbit Eye. Amer. J. Ophthal., *34*:1357, (Oct.) 1951.
147. C. T. Billroth. Untersuchungen Uber Die Vegetations Formen von Coccobacteria Septica: Versuch Einer Wissenshaftlichen Kritik der Vershiedenen Methoden Antiseptisher Wundbehandlung, Berlin, G. Riemer, 1874.
148. E. J. Poth, *et al.* Bacteristatic Properties of Sulfanilamide and Some Chemotherapeutic Agents Locally Active in the Gastrointestinal Tract. Arch. Surg., *44*:187, 1942.
149. New and Nonofficial Remedies. J. A. M. A., *154*:338, (Jan. 23) 1954.
150. E. J. Poth, *et al.* A Critical Analysis of Neomycin as an Intestinal Antiseptic. Texas Rep. Biol. & Med., *9*:631, 1951.
151. S. J. Ishihara and O. Felsenfeld. Action of Neomycin on Protozoa. J. Parisitol., *35*:33, (Dec. suppl., pt. 2) 1949.
152. E. Jawetz and J. B. Gunnison. Studies on Antibiotic Synergism and Antagonism: A Scheme of Combined Antibiotic Action. Antibiot. and Chemoth., *2*:243, 1952.
153. M. Goldin. The Synergistic Effect of Thonzonium Bromide on the Antibiotic Activity of Mixtures of Gramicidin and Neomycin; as cited in reference (119).
154. R. E. Rhodes and R. J. Ferlauto. The Activity of Polymixin, Neomycin, and Gramicidin Combinations. Proceedings of the Symposium on Antibiotics, Antibiotics Annual Medical Encyclopedia, Inc., p. 565, 1953-1954.
155. F. S. Barr, *et al.* Syngerism and Antagonism in Antibiotic Combinations. Antibiot. & Chemoth., *4*:818, (July) 1954.
156. J. R. Wilkins. Personal Communication. Dept. Infect. Dis., The Upjohn Co., Kalamazoo, Mich.
157. S. A. Waksman, *et al.* The *In Vivo* Activity of Neomycin. J. Bact., *58*: 229, 1949.
158. S. Spicer. Bacteriologic Studies of the Newer Antibiotics: Effect of Combined Drugs on Micro-organisms. J. Lab. & Clin. Med., *36*:183, 1950.
159. E. A. Bliss, *et al.* Studies of Combinations of Antibiotics *In Vitro* and in Experimental Infections in Mice. Bull. Johns Hopkins Hosp., *90*:149, 1952.
160. Annotated Bibliography of Tyrothricin. Res. Div., S. B. Penick & Co., New York, 1947.
161. B. F. Miller, *et al.* Antibacterial Properties of Protamine and Histone. Science, *96*:428, 1942.
162. Neomycin Sulfate in Veterinary Practice, Upjohn Co., Dept. of Vet. Med., Kalamazoo, Mich., 1951. As cited in reference (110).
163. A. R. Drury. Evaluation of Neomycin Sulfate in Treatment of Bovine Mastitis. Vet. Med., *47*:407, (Oct.) 1952.
164. E. W. Tucker. Studies on Bovine Udder Infection with *Pseudomonas Aeruginosa* and Other Closely Related Organisms. Cornell Vet., *44*: 110, (Jan.) 1954.
165. J. Simon, *et al.* The Comparative Value of Neomycin Sulfate and Crystalline Penicillin G for the Treatment of Chronic Streptococcic Mastitis of Cattle. J. Am. Vet. M. Assoc., *121*:89, (Feb.) 1954.
166. E. W. Tucker and S. D. Johnson. Observations on Treatment of Udder Infections and Clinical Mastitis with Neomycin Sulfate. J. Am. Vet. M. Assoc., *123*:332, (Oct.) 1953.
167. C. E. E. Bunn and S. F. Scheidy. Antibiotic Agents for Veterinary Use. J. A. Vet. Med. A., *121*:95, (Aug.) 1952.
168. R. Fenstermacher. Diseases of Poultry. Edited by H. E. Biester and L. H. Schwarte. Iowa State College Press, Ames, 258, 1948.
169. R. T. McCarty. Neomycin Sulfate Treatment of *Salmonella Derby* Infection in Geese. J. Am. Vet. Med. A., *122*:386, (May) 1953.
170. R. J. Dubos. Studies on a Bactericidal Agent Extracted from a Soil Bacillus. I. Preparation of the Agent. Its Activity *In Vitro*. J. Exp. Med., *70*:1, 1939.
171. R. J. Dubos. Bactericidal Effect of an Extract of a Soil Bacillus on Gram-Positive Bacteria. Pro. Soc. Exp. Biol. Med., *40*:311, 1939.
172. J. C. Hoogerheide. Studies on Capsule Formation. III. Inhibition of Capsule Formation of *Klebsiella Pneumoniae* (Friedlander's Bacterium) by an Agent Produced by a Soil Bacillus. J. Bact., *40*:415, 1940.
173. J. C. Hoogerheide. An Agent, Isolated from a Soil Bacillus, Which Inhibits Encapsulation of Friedlander's Bacterium and Is Highly Bactericidal for Gram-Positive Micro-Organisms. J. Franklin Inst., *229*:677, 1940.
174. Pharmacopeia of the U. S. A., 14th Rev., Nov. 1, 1950, p. 649.
175. J. E. Bordley, *et al.* The Local Use of the Sulfonamides, Gramicidin (Tyrothricin), and Penicillin in Otolaryngology. Ann. Atol. Rhin. Laryngol., *51*:936, 1942.
176. W. E. Herrell. Gramicidin and Penicillin. Surg. Clin. N. Amer., *33*: 1163, 1943.
177. C. M. Downs. The Effect of Bactericidal Agents on Gram-Negative Cocci. J. Bact., *45*:137, 1943.
178. D. Heilman and W. E. Herrell. Mode of Action of Gramicidin. Proc. Soc. Exp. Biol. Med., *47*:480, 1941.
179. S. J. Crowe. The Local Use of Sulfadiazine Solution, Radon, Tyrothricin, and Penicillin in Otolaryngology. Ann. Otol. Rhin. Laryngol., *53*:227, 1944.
180. S. J. Crowe and A. T. Ward. Local Use of Sulfadiazine, Tyrothricin, Penicillin, and Radon in Otolaryngology. N. Carolina Med. J., *4*:431, 1943.
181. R. Kelso and B. Thompson. A Study to Determine the Antibacterial Efficiency of Combined Tyrothricin and Sulfadiazine. Med. Ann. Dist. Colum., *15*:20, 1946.
182. L. Biró, et al. Experimental Studies on Tyrothricin. Magyar Belorvosi Archivum (Belgrade), *3*:143, 1950.
183. A. E. Rivas. Pulmonary Actinomycosis: Efficiency of Penicillin with Tyrothricin in Nebulization. Semana Medica (Buenos Aires), *100*:447, (Jan.) 1952.
184. S. Malandrino. Medical Therapy of Empyema and Bronchiectasis. Rossegna Di Clinica, Terapia e Scienze Affini, *52*:247, (Oct.-Dec.) 1953.
185. A. H. Kutscher, *et al.* Reactions Following the Use of Bacitracin, Tyrothricin, Gramicidin, and Polymixin B Troches; a Controlled Study. J. Allergy, *25*:46, (Jan.) 1954.
186. E. Kaiser and V. Camboni. Studies on the Effect of Hydrogen Ion Con-

centration on Antibiotic Action of Tyrothricin. Bolletino Dell'Instituto Sieroterapico Milanese. *32*:298, (July-Aug.) 1953.
187. J. Mortelmans and J. Vercruysse. Results Obtained in the Tropics with Smallpox Vaccine Purified by Tyrothricin. Annales De La Societe Belge de Medecine Tropicale. *33*:241, (June) 1953.
188. W. Weigand. Antibiotic Effect of Various Tyrothricin Preparations on Clostridium Tetani. Klinische Wochenschrift, *31*:1055, (Oct.) 1953.
189. A. Mehring. Clinical Experiences with Aerosol Therapy with Aqueous Solution of Tyrothricin; Preliminary Report of 150 Cases. Medizinische Klinik, *48*:1781, (Nov.) 1953.
190. H. F. Oestern. Experimental Studies on the Preventive Effect of Tyrothricin on Wound Infection. Langenbecks Archiv Fur Klinische Chirurgie vereinigt mit Deutsche Zeitschrift Fur Chirurgie, *274*:444, 1953.
191. P. Freyberger. Preliminary Report on Clinical Experiences with the Antibiotic Tyrothricin in Dentistry. Osterreichische Zeitschrift Fur Stomatologie, *50*:159, (Mar.) 1953.
192. C. H. Wulffing. Tyrosolvin in Dentistry. Zahnarztliche Welt, *8*:119, (Feb.) 1953.
193. R. Zumkeller. Tyrothricin in Leukorrhea. Praxis (Berne), *42*:316, (Apr.) 1953.
194. P. Levi and V. Lecco. Microbiological Studies on Therapeutic Action of Certain Antibiotics in Supportive States Following Antroatticotomy; Tyrothricin and Potassium Iodide. Bollettino Delle Malattie Dell'-Orecchio, Della Gola, Del Naso (Pisa), *71*:29, (Jan.-Feb.) 1953.
195. K. P. Bopp. Aerosol Therapy with Tyrosolvin. Medizinische (Stuttgart), No. *7*:224, (Feb.) 1953.
196. F. DiRaimondo, *et al.* Vitamin Inhibition of Antibiotics by Metabolic Antagonism. Research *In Vitro* on *Staph. Aureus* with Terramycin and Tyrothricin. Bollettino Dell'Istituto Sieroterapico Milanese, *32*:45, (Jan.-Feb.) 1953.
197. G. Nitti and V. Nisio. Thermostability of Tyrothricin After Boiling. Tyndallization, and Autoclave Sterilization. Bollettino Della Societa Italiana Di Biologia Sperimentale (Napoli), *28*: 1807, (Nov.) 1952.
198. G. Nitti and V. Nisio. Chronostability of Tyrothricin in So-Called Aqueous Solutions. *Ibid.*, *28*:1808, (Nov.) 1952.
199. G. Bellieni. Studies on Diphtheria Bacilli Carriers. Lattante (Parma), *23*: 882, (Nov.) 1952.
200. R. D. Hotchkiss and R. J. Dubos. The Isolation of Bactericidal Substances from Cultures of *Bacillus Brevis*. J. Biol. Chem., *141*:155, 1941.
201. D. Heilman and H. E. Herrell. Comparative Antibacterial Activity of Penicillin and Gramicidin: Tissue Culture Studies. Proc. Staff Meet. Mayo Clin., *17*:321, 1942.
202. E. J. Foley and S. W. Lee. Observations on Antibiotic Coaction of Gramicidin and Penicillin on Streptococci and Staphylococci *In Vitro*. J. Immunol., *58*:203, 1948.
203. Research Division. S. B. Penick & Co., New York. 1954.
204. Council on Pharmacy and Chemistry. Warning Statement to be Included in Aureomycin Hydrochloride, Chloramphenicol and Terramycin Hydrochloride Labeling. J. A. M. A., *145*:1267, (Apr. 21) 1951.
205. N. F. Conant, *et al.* Manual of Clinical Mycology. Phila., W. B. Saunders Co., 1944.
206. T. G. Schnoor. The Occurrence of Monilia in Normal Stools. Am. J. Trop. Med., *19*:163, 1939.
207. K. D. Lahiri. Melanoglossia Due to Penicillin Therapy. J. Indian Med. Assoc., *16*:159, 1947.
208. R. J. Dubos. Bacterial and Mycotic Infections in Man. J. B. Lipincott Co., Phila., 1948.
209. S. A. Wolfson. Black Hairy Tongue Associated with Penicillin Therapy, J. A. M. A., *140*:1206, 1949.
210. V. J. Kelley. Oral and Pharyngeal Moniliasis. Ann. Otol. Rhin. & Laryng., *58*:883, 1949.
211. H. J. Harris. Aureomycin and Chloramphenicol in Brucellosis. J. A. M. A., *142*:161, (Jan. 21) 1950.
212. Editorial. Moniliasis as a Common Complication of Biotic Therapy. South. M. J., *44*:251, (Mar.) 1951.
213. J. W. Woods, *et al.* Monilial Infections Complicating the Therapeutic Use of Antibiotics. J. A. M. A., *145*:207, (Jan. 27) 1951.
214. R. B. Pappenport, Jr., and E. S. Schnall. Moniliasis in Patients Treated with Aureomycin. Arch. Int. Med., *88*:729, 1951.
215. R. B. Pappenport, Jr., and E. S. Schnall. Moniliasis in Patients Treated with Antibiotics. Biopsy, *2*:9, 1951.
216. M. K. Hutchinson. Moniliasis: A Complication of Antibiotic Therapy. J. Kansas M. Soc., *54*:436, (Sept.) 1953.
217. H. P. Schenk. Specific Problems in the Use of Antibiotics in Otolaryngology. Laryngoscope. *63*:412, (May) 1953.
218. J. B. Miale. *Candida Albicans* Infection Confused with Tuberculosis. Arch. Path., *35*:427, 1943.
219. W. W. Spink and E. M. Yow. Aureomycin: Present Status in the Treatment of Human Infections. J. A. M. A., *141*:964, (Dec. 3) 1949.
220. W. W. Abrams. Pulmonary Moniliasis. J. Kansas Med. Soc., *51*:562, 1950.
221. E. L. Keeney. Candida Asthma. Ann. Int. Med., *34*:223, 1951.
222. F. C. Ormerod and I. Friedman. A Case of Moniliasis. Brit. Med. J., *4145*:1439, 1951.
223. F. W. Wolff. Moniliasis Pneumonia Following Aureomycin Therapy. Lancet, *1*:1236, 1952.
224. M. E. Florey. The Clinical Application of Antibiotics-Penicillin. Oxford University Press, 1952.
225. W. L. Hewitt and B. Williams, Jr. Chloramphenicol in Treatment of Infection. N. Eng. J. Med., *242*:119, 1950.
226. I. Lighterman. Oral Moniliasis—A Complication of Aureomycin Therapy. J. Oral Surg. Oral Med. and Oral Path., *4*:1420, 1951.
227. A. J. Schaffer and E. H. Oppenheimer. Pseudomonas (Pyocyaneus) Infections of the Gastro-Intestinal Tract in Infants and Children. South. M. J., *41*:460, (May) 1948.
228. S. H. Walker. Polymixin B in Pseudomonas and Proteus Enteritis. J. Pediat., *41*:176, (Aug.) 1952.
229. L. J. Geppert, *et al.* Pseudomonas Infections in Infants and Children. J. Pediat., *41*:555, (Nov.) 1952.
230. N. F. Conant. Manual of Clinical Mycology. W. B. Saunders Co., 1945.
231. R. W. Oblath, *et al.* Pulmonary Moniliasis. Ann. Int. Med., *35*:97, 1951.
232. L. V. McVay and D. H. Sprunt. A Study of Monilinsis in Aureomycin Therapy. Proc. Soc. Exper. Biol. and Med., 78:759, 1951.
233. R. Cohen and M. Persky. Sodium Caprylate Treatment for Thrush. Arch. Pediat., *68*:33, 1951.
234. I. Kass, *et al.* Treatment of Broncho-Pulmonary Moniliasis by Dye Inhalation. Dis. Chest, *21*:205, 1952.
235. C. S. Livingood, *et al.* Comparative Effects of Neomycin and Other Antibiotics on Pyogenic Bacteria. A. M. A. Arch. Dermatol. Syphilol., *69*:43, (Jan.) 1954.
236. R. Elson-Dew. Antibiotics in Acute Ulcerative Amebic Colitis. Amoebiasis Research Unit, Durban, South Africa. Presented at Second Annual Symposium on Antibiotics, Washington, D. C., (Oct. 25-29) 1954.
237. I. S. Rossoff. Personal Communication.
238. E. A. Brown. Problems in the Bioassay of Antibiotics. An Introduction. Presented at Second Annual Symposium on Antibiotics, Washington, D. C., (Oct. 25-29) 1954.
239. R. S. Dickson. Neomycin Sulfate in *Salmonella Dublin* Infection of Calves. Vet. Med., *49*:421, (Oct.) 1954.

Chemical Specialties

GELLOID
(Pure calcium Carragheen sulfate)

GUMS
ARABIC—TRAGACANTH—KARAYA
(Whole, granular or powdered)

HYDROSULFITE of SODA
(Pharmaceutical grade)

SULPHONATED OILS
(Vegetable and mineral bases)

VISCO GUM E
(Specially prepared for wave-set solutions)

Ask for
"The Story of Water Soluble Gums"

JACQUES WOLF & CO.
Chemicals PASSAIC, N. J.

Plants in: Clifton, N.J., Carlstadt, N.J., Los Angeles, Calif.

PROGRESS & NYSCO

PROGRESS *and* **NYSCO** *are synonymous. Constant research and development of new products make* **NYSCO** *leaders in the Field.*

Ask for our **1955 CATALOG** and the January issue of **NYSCO NEWS & NOTES** with our 3 year progress report (1952-54) And See . . . . what **NYSCO** progress can do for you.

Write, wire or phone

NYSCO LABORATORIES, Inc. 22-14 - 40th Ave.
Long Island City, N. Y. Tel. Ravenswood 9-6960 Cable: NYSCOLAB N.Y.

MOULDS

LIPSTICK - COLOGNE - DEODORANT
STYPTIC PENCILS - MASCARA
SUPPOSITORIES

PROGRESSIVE LABELING MACHINE, Inc.
137 West 22nd St., New York 11, N. Y.

ROUGE COMPACT POWDER
PUNCHES FOR TABLETS
also
FOOT & POWER PRESSES FURNISHED

DIES

Professional Service

***ARLINCO RESEARCH LABORATORY, INC.**
Research, Formulation and Application to the Industry.
Ethical Pharmaceuticals, Drugs, Cosmetics and Perfumery.
333 W. 52nd St., New York 19, N. Y.
PLaza 7-3861
*A-R-L Inco means: Applied Research Laboratory, Incorp.

LEBERCO LABORATORIES
Hormone Assays • Drug Assay
Pharmaceutical and Cosmetic Research
Sterility Tests • Toxicity Studies
Send for information concerning our services
125 HAWTHORNE ST., ROSELLE PARK, N. J.

RESEARCH LABORATORIES
FOSTER D. SNELL INC.
29 WEST 15TH ST. NEW YORK 11, N.Y. — WA 4-8800
CHEMISTS • ENGINEERS

SEIL, PUTT & RUSBY, INC.
Analytical, Consulting, Research Chemists
Established 1921
Specialists in analysis of Drugs, Cosmetics Essential Oils.
Ask for Estimates-Quotations-No Obligation
Lab's: 16 East 34th Street, New York 16, N.Y.
Telephone Murray Hill 3-6368

WISCONSIN ALUMNI RESEARCH FOUNDATION
Project Research, Consultation, and Production Control Services *in* Biochemistry, Chemistry, Bacteriology, Entomology, and Pharmacology
Write for Price Schedule
WISCONSIN ALUMNI RESEARCH FOUNDATION
P. O. BOX 2059-J • MADISON 1, WISCONSIN

TRUESDAIL Laboratories, Inc.
Write for Brochure-4101 N. Figueroa St.
Los Angeles 65, Calif. • CApitol 4148
Product & Process Development
Toxicology
Sterility Tests
CHEMISTS • BACTERIOLOGISTS • ENGINEERS
Charter Member ACIL

Classified Advertising

Machinery and Equipment For Sale

UNION Rebuilt Machinery
Established 1912

LATE-TYPE REBUILT AND GUARANTEED EQUIPMENT
Reduced for Quick Sale

Fitzpatrick "D" S.S. Comminutors.
Stokes RB, RD, Eureka Tablet Machines.
Colton 2RP and 3RP Rotary Tablet Machines.
Capem 1SF and Resina LC Auto. Cappers.
Copper Coating Pans, 24" to 40" diameter.
B. P. 2 to 200 gal. Double Arm Mixers.
Pfaudler King, Horix, Elgin Stainless Steel Rotary Fillers.
Pony M, MX, ML; Ermold, World Semi and Pneumatic Auto. Labelers.
Kyler and Burt Wraparound Labelers.
Day Powder Mixers, 15 to 10,000 lbs. cap.
Robinson, Tyler Hum-mer, Gayco, Raymond, Great Western Sifters.
Mikro Bantam 1SH, 3W, 4TH Pulverizers.
Hobart, Read, Glenn 10 to 120 qt. Mixers.
S. & S. G1, G2, HG88 Powder Fillers.
Stokes Electric Shelf Drying Oven.
Hayssen, Package Machy., Oliver, Hudson Sharp, Scandia, Miller Wrappers.

Immediate Deliveries

Tell Us Your Requirements
Complete Details and Quotations
Promptly Submitted

UNION STANDARD EQUIPMENT CO.
318-322 Lafayette St., New York 12, N. Y.

FOR SALE: 1-Baker Perkins S.S. jacketed Mixer 35 gal.; 1-Day S.S. Mixer 50 gal.; 9-Stokes DDS2, DD2, BB2, D4, D3 and B2 Rotary Tablet Machines; 1-Mikro No. 2 TH S.S. Pulverizer; 6-Rotex Sifters 40"x120", 40"x84", 40"x56", 20"x48" single and double deck; 1-Robinson 4000 lbs. heavy duty Powder Mixer; 1-Day 2000 lbs. Powder Mixer; 2-Shriver 30" and 24" aluminum P&F Filter Presses; 3-Groen 150 and 125 gal. S.S. agitated Kettles; 4-Devine Vacuum Shelf Dryers 4, 6, 10 and 17 shelves. Partial Listing. Send for "News Flash", BRILL EQUIPMENT COMPANY, 2402 Third Avenue, New York 51, New York.

FOR SALE: At our new location in Hoboken, N. J. Send us your inquiries for SS. Kettles and Tanks, Filter Presses, Mixers, Filters, Grinders, Pebble Mills, Portable Agitators, Filling Machines, Dryers, Pulverizers, Labellers. We are interested in buying your idle or surplus machinery; single items to complete plants. CONSOLIDATED PRODUCTS CO., INC., 69 Garden Street, Hoboken, N. J HO3-4425. N.Y. Tel. BA 7-0600.

FOR SALE: Stainless Steel Tanks & Kettles' Tablet Machines, Portable Elec. Agitators, Mixers, Grinders, Pebble Mills, Filter Presses, Dryers, Filling Machines, Labelers, Capping Machines, etc. Send for listing. STEIN EQUIPMENT CO., 107 8th St., Brooklyn 15, N. Y. Sterling 8-1944.

EQUIPMENT FOR SALE: 3 Motorized 18" Jacketed Paint Mills. 2 Powder Mixers and Sifters. 1 Colton Automatic Tube Filler No. 14. 1 Stokes & Smith Power Filler and Weigher. 1 Dough Mixer. Box F-7, DRUG & COSMETIC INDUSTRY.

Machinery Wanted

WANTED: To round our production; Automatic Filler & Closer for collapsible tubes, Fitzpatrick S/S Comminutor, Tablet Counter, and high speed Packaging Line. Give full details and price. Box N-5, DRUG AND COSMETIC INDUSTRY.

Situations Wanted

FOREIGN SERVICE—Chemical Engineer with diversified manufacturing and selling experience in drugs and pharmaceuticals seeks position of high responsibility Latin America or Europe. M.S. degree, languages, overseas experience. Age 30, married. Box F-2, DRUG & COSMETIC INDUSTRY.

SALESMAN: Presently representing cosmetic company in New England and New York State, covering Department stores, Drug Stores and Drug wholesalers. Single 32, can re-locate. Desires change to fine raw material house. Box F-4, DRUG & COSMETIC INDUSTRY.

Help Wanted

WANTED, by an old established well-known essential oil house, in business over 40 years, sales representative to cover Virginia, south to include Florida and Eastern Tennessee. Our employees know of this ad. Box F-6, DRUG & COSMETIC INDUSTRY.

Business Opportunities

PAKISTAN: Agencies for USA products wanted. Send literature samples if possible. Inquiries for export from Pakistan invited. WESTERN TRADES CO., 38 Lakshami Building, Karachi, (Pakistan).

MANUFACTURER of nationally known drug item; manufacturing other items also, wishes to sell. Opportunity to expand business. Box JA-6, DRUG & COSMETIC INDUSTRY.

WHAT'S YOUR TROUBLE? Cosmetic Chemist Long Experience can Help You. Tell me what you want. I will send you finished samples of the products you want and cost of formulas before you buy. Something new; A simple fixative to add to any cold wave solution. Makes a Hair Strate Solution for Women and Men. COSMETIC CHEMIST, 1112 Chemical Bldg., St. Louis 1, Mo.

WANTED: To purchase reasonably priced small manufacturing or distributing firm having one or more chemical specialties of proven merit, located in Chicago metropolitan area. Address Box F-5, DRUG & COSMETIC INDUSTRY.

DRUG STORE, eastern city, sales $5,000 month, good prescription business, nicely equipped, soda fountain, employs 3, modern building, properly included, attractively priced to settle estate. Apple Co., Brokers, Cleveland, Ohio.

FOR SALE: Million Dollar idea. Small tablet added to water, waves, curls or straightens hair. Non-toxic. Harmless if taken. Not a cold wave. Vast potentials mail order. It is excellent. $25,000.00 for an interest or partnership. Box F-3, DRUG & COSMETIC INDUSTRY.

Extra Money in Your Pocket

If you are visiting Drug and Sundry Jobbers, we have an excellent additional line for you.

Easy to carry, only a few items of proven staple sellers. Steady repeat business. A few good territories open. 10% commission. Territory fully protected. No House accounts.

Please indicate territory, approximate number of accounts covered and other lines carried in first letter.

FRENCH POWDER PUFF CO.
90 Prince St. New York, N. Y.

VANILLIN

ZIMCO® LIGNIN VANILLIN U. S. P.

A Natural Source Vanillin Originated and Manufactured in the United States.

A Finer Vanillin of Exquisite Aroma.

Consult your flavor supplier

Sterwin Chemicals Inc.

SUBSIDIARY OF STERLING DRUG INC.

1450 BROADWAY, NEW YORK 18, N. Y.
2020 Greenwood Ave., Evanston, Ill.
FACTORY, ROTHSCHILD, WISCONSIN

HIGH GRADE
COSMETIC POWDERS

Tamms

- Powdered Talc
- Infusorial Earth
- English Kaolin
- Clay and Silica
- Precipitated Chalk

Write us about your special needs.
Send for prices and samples.

TAMMS INDUSTRIES, INC., Dept. RM-11, 228 N. La Salle St., Chicago 1

---

falba

Reg. U. S. and Foreign Countries

"THE HEART OF LANOLINE"

THE OXYCHOLESTERIN ABSORPTION BASE
Suggested Formulae on Request

Pfaltz & Bauer, Inc.
EMPIRE STATE BUILDING, NEW YORK

MOULDS

for
LIPSTICKS
MASCARO
SUPPOSITORIES
STYPTIC PENCILS

and DIES for ROUGE COMPACT POWDER

Write for Catalog

A. CAVALLA, INC. 163 West 18th Street, NEW YORK, 11, N.Y.

THERAPEUTIC SUNBURN PREVENTIVE

Total restriction burning wave-lengths.
For persons allergic or hypersensitive to sunlight and for protection of slow healing burned areas.
Innocuous—practically invisible, friendly to skin.
May be promoted through professional or lay markets.
Test marketing indicates immediate wide acceptance.

Box F - 1, Drug & Cosmetic Industry
101 West 31st St. New York 1, N. Y.

Aromatic Chemicals

FOR PERFUMERY AND FLAVORS

Isopropyl Quinoline • Isobutyl Quinoline
Ethyl Anthranilate • Isobutyl Anthranilate
Diacetyl • Acetyl Propionyl • Acetoin

FAIRMOUNT CHEMICAL CO., INC.
600 FERRY STREET • NEWARK 5, N. J.

Use LABELS AND SEALS..
by
JOHN HORN
835 - 839 TENTH AVENUE
NEW YORK 19, N. Y.
FOR OVER FIFTY YEARS
for greater sales appeal
METAL • EMBOSSED • ENGRAVED
DIE STAMPING FOR BOXMAKERS

TL Beeswax

- PURE WHITE
- EXTRA QUALITY
- ABSOLUTELY PURE
- ABOVE U.S.P. STANDARDS
- Samples will gladly be sent on request—at no obligation

Serving the Trade for 103 Years

THEODOR LEONHARD WAX CO., INC.
HALEDON, PATERSON NEW JERSEY
Western Distributor: A. C. Drury & Co., 219 E. North Water St., Chicago, 11, Ill

WITCO

Cosmetic Grade

STEARATES

BUTYL
CALCIUM
LITHIUM
MAGNESIUM
SODIUM
ZINC

WITCO CHEMICAL COMPANY
260 Madison Avenue, New York 16, N. Y.

35 Years of Growth

Chicago • Boston • Cleveland • Akron • Atlanta • Houston
Los Angeles • San Francisco
London and Manchester, England

Efficient, Economical, Uniform

Write today for Stearates Bulletin 53-1

ADVERTISING INDEX

American Aromatics, Inc. 268
American Cholesterol Products, Inc. 258-259
American Cyanamid Co., Fine Chemicals Division 135
Anchor Hocking Glass Company 182-183
Ansbacher-Siegle Corp. 268
Armour & Company 240
Armstrong Cork Company 188
Atlas Powder Co. ..... Insert facing 164
Avon Products, Inc. 149

Baker Chemical Co., J. T. 210
Battle Creek Packaging Machines, Inc. 231
Brown Bag Filling Machine Co., Inc. 281
Bush & Co., W. J. 265

Carbide & Carbon Chemicals Div., Union Carbide & Carbon Corp. 139
Carr-Lowrey Glass Co. 200
Cavalla, Inc., A. 287
Chaleyer, Inc., Ph. 269
Charabot & Co., Inc. ..... Insert bet. 156-157
Chrystal & Co., Inc., Charles B. 281
Columbia-Southern Chemical Corp. 136
Colton Company, Arthur 230, 279
Colt's Mfg. Company 160
Continental Can Co. 194
Continental Filling Corp. 187
Crown Cork & Seal Company 184
Crown Cork & Seal Company, Can Division 198

Devold Oil Co., Peder 283
Distillation Products Industries 145
Dow Chemical Corp. 146
Dragoco 218
du Pont de Nemours & Co., Inc., Cel-O-Seal Section 195
du Pont de Nemours & Co., "Kinetic" Chemicals Div. 190-191
Durlin & Co. ..... Insert facing 212
Duveen Soap Corp. 133

Eastman Chemical Products, Inc. 261
Emery Industries, Inc. 151
Ertel Engineering Corp. 267

Fairmount Chemical Co., Inc. 287
Felton Chemical Co., Inc. 150
Firmenich Incorporated ..... Cover 4

Florasynth Labs., Inc. 144
French, Inc., Benj. 271
Fritzsche Bros., Inc. ..... Inser. bet. 244-245

Givaudan-Delawanna, Inc. ..... Insert bet. 164-165; Pg. 208
Glycerine Producers Assn. 155
Goldschmidt Chem. Corp. 148
Gottscho, Inc., Adolph 266
Gross, A. & Co. 251

Harchem Division, Wallace & Tiernan, Inc. 214
Haring Equipment Corp. 232
Heyden Chemical Corp. 236
Hoffmann-La Roche, Inc. 246
Hormann & Co., F. R. 269
Horn, John 287
Hotel, Jefferson 273
Huisking & Co., Inc., Chas. L. 283

Imco Container Corp. ..... Insert facing 180

Kiefer Machine Co., Karl 226
Kimberly-Clark Corp. 181
Kohnstamm & Co., H. ..... Insert facing 213
Kolmar Laboratories 162

Lautier Fils 255
Leonhard Wax Co., Theodore 287

Magnus, Mabee & Reynard, Inc. 137
Mallinckrodt Chemical Wks. ..... Insert bet. 140-141 and facing 165
Mennen Company, The 256
Merck & Co., Inc. 257
Metalsmith Division of Orange Roller Bearing Co. 232

New Jersey Machine Co. 233
New Jersey Zinc Co. 263
New York Quinine & Chemical Works, Inc. ..... Insert bet. 156-157
Niagara Blower Company 260
Norda Essential Oil & Chemical Co. ..... Cover 2
Nysco Laboratories 285

Old Empire Mfg. Chemists, Inc. 283
Owens-Illinois Glass Co. ..... Insert facing 197

Parsons-Plymouth, Inc., M. W. 264
Penick & Co., S. B. 141, 242
Pennsylvania Glass Products Co., Inc. 216
Pfaltz & Bauer Co., Inc. 287
Pfizer & Co., Inc., Chas. 153
Pittsburgh Lectrodryer Corp. 224

Plax Corporation ..... Insert facing 205
Pneumatic Scale Corp., Ltd. 222
Polak's Frutal Works 253
Polak & Schwarz, Inc. 158
Popper & Sons, Inc. 275
Potdevin Machine Co. 228
Precision Valve Corp. ..... Insert facing 204
Progressive Labelling Machine, Inc. 285

Reheis Co., Inc. 262
Rhodia, Inc. 138
Richford Corporation 192
Rosenthal-Bercow Co., Inc. 275
Roure-Dupont, Inc. ..... Insert bet. 148-149

Santonin Company of America, Inc. 283
Schimmel & Co., Inc. 152
Scoville Manufacturing Co. ..... Insert facing 181
Seaplant Chemical Corp. 271
Shell Chemical Corp. ..... Insert facing 140
Sindar Corporation ..... Insert facing 157
Sonneborn Sons, Inc., L. 238
Standard Pharmacal Company 279
Stepan Chemical Company ..... Insert facing 156
Sterwin Chemical, Inc. 287
Stokes Machine Co., F. J. 220
Stokes & Smith Company 202
Strong Cobb & Co., Inc. 154
Sun Tube Corp. ..... Insert facing 196
Synarome Corp. of America 277
Synfleur Scientific Labs., Inc. 147
Syntomatic Corp. 239

Tamms Industries, Inc. 287
Tombarel Products Corp. 140
Trade Mark Record Book 156

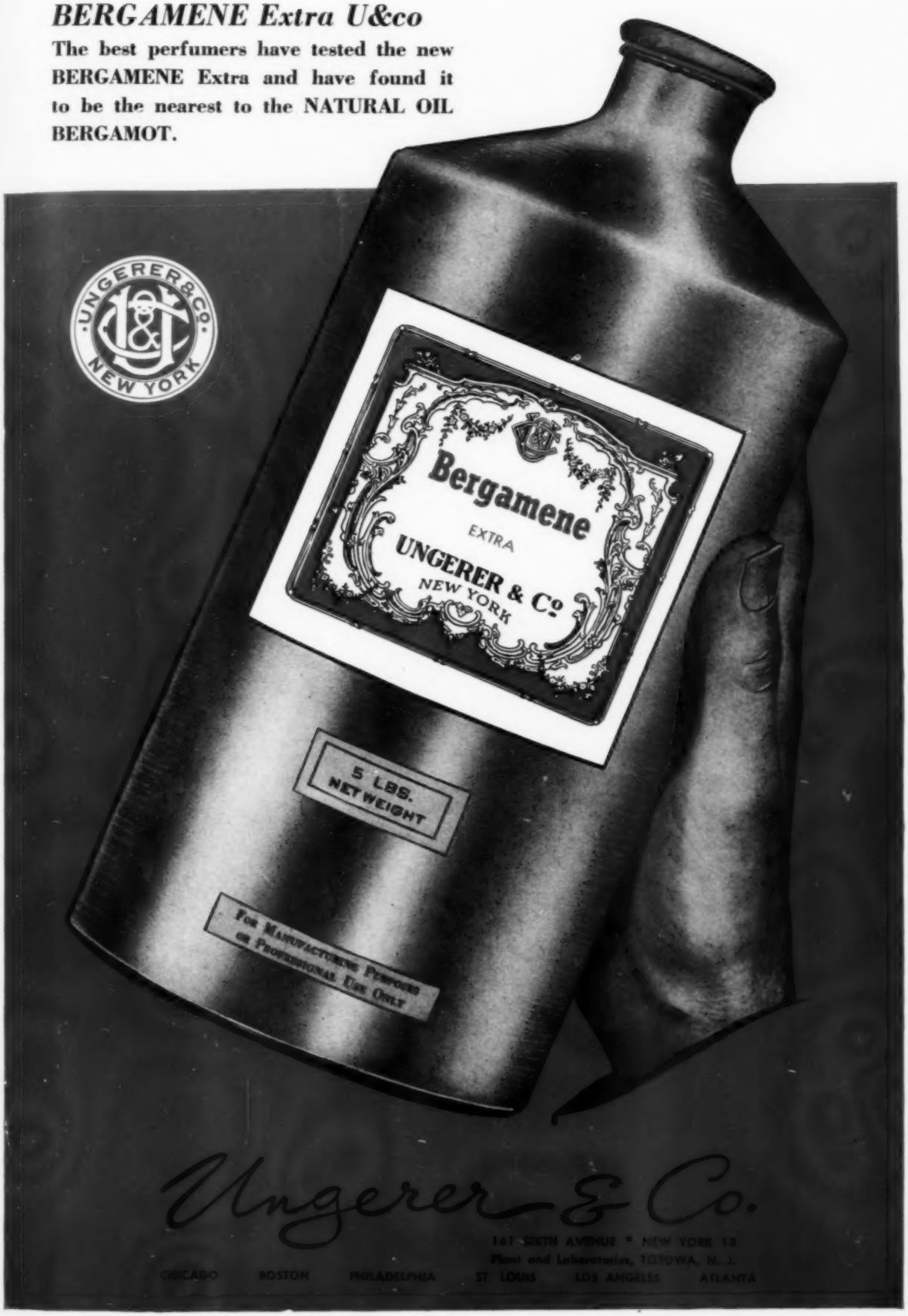
Ungerer & Co., Inc. ..... Cover 3
Union Carbide & Carbon Corp., Carbide & Carbon Chemicals Div. 139
U. S. Bottlers Machinery Co. 232

Valcourt, Inc. 277
van-Ameringen-Haebler, Inc. 142-143
van Dyk & Company, Inc. 272
Verley & Company, Albert ..... Insert bet. 236-237
Verona Chemical Company ..... Insert facing 141

Welch, Holme & Clarke, Inc. 249
Whittaker, Clark & Daniels, Inc. 273
Will & Baumer-Candle Co. 266
Windsor Chemical Laboratories 272
Witco Chemical Co. 288
Wolf, Jacques & Co. 285

BERGAMENE Extra U&co

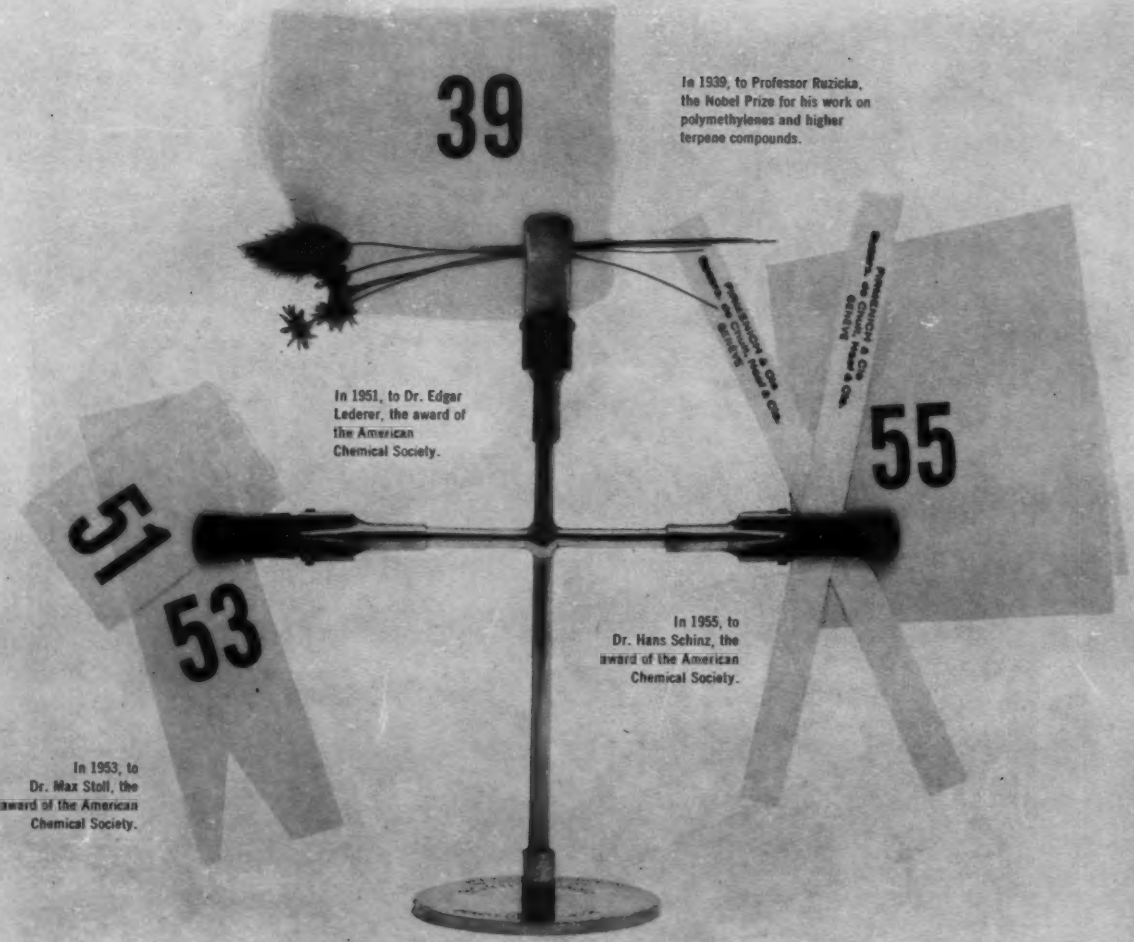
The best perfumers have tested the new BERGAMENE Extra and have found it to be the nearest to the NATURAL OIL BERGAMOT.



Ungerer & Co.

161 SIXTH AVENUE • NEW YORK 13
Plant and Laboratories, TOTOWA, N. J.

CHICAGO BOSTON PHILADELPHIA ST. LOUIS LOS ANGELES ATLANTA


39
In 1939, to Professor Ruzicka, the Nobel Prize for his work on polymethylenes and higher terpene compounds.
In 1951, to Dr. Edgar Lederer, the award of the American Chemical Society.
55
51
53
In 1955, to Dr. Hans Schinz, the award of the American Chemical Society.
In 1953, to Dr. Max Stoll, the award of the American Chemical Society.

an award . . an award . . an award
and now another award
to a member of the research staff
of Firmenich

The harmonious coordination of industrial and scientific research, originally established by M. Philippe Chuit and Professor Ruzicka and carried forward by Dr. Max Stoll and his associates, has borne much fine fruit in the field of organic synthetics for perfumes and flavors. So these distinguished citations—the Nobel Prize and the awards of the American Chemical Society under the Fritzsche grant—bear witness. So does the increasing preference for Firmenich products as it is expressed by customers throughout the world.

FIRMENICH & CIE
SUCCESSEURS DE
CHUIT, NAEF & CIE
GENEVE SUISSE

FIRMENICH INC.
250 WEST 18TH ST. NEW YORK 11

CHICAGO OFFICE: 612 NORTH MICHIGAN AVENUE • FIRMENICH OF CANADA, LIMITED • 348 WALLACE AVENUE, TORONTO • GENEVA • PARIS • LONDON

H & CIE

EF & CIE

CH INC.

NEW YORK